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VOL. IX. 1900.

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FOUNDED BY JAMES PLEASANT PARKER.

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### Explanation of Photomicrographs.

**Fig. 1.** Section of mucous membrane stained with eosin and alkaline methylene blue; Zeiss No. 20 mm. planar objective; no eyepiece. A marked round celled infiltration is seen in the corinne. The *rete mucosa* is thickened and prolonged upward into the "hairs." The bases of three of the latter appear in the section, showing the imbricated arrangement of their cells. Other hairs are seen lying free in the vicinity, cut more or less transversely.

**Fig. 3.** Longitudinal section of filament stained with eosin and alkaline methylene blue; 3mm. Zeiss apochrom. objective, 140 aperture, 4 projection eyepiece. In the lateral branches of the filament are seen numerous unstained but highly refractile granules of varying size. In several places clumps of bacilli occur as described in the text.

**Fig. 2** Section of the mucous membrane stained with acid fuchsin and picric acid to show their distribution of the keratin. This first appears in the deeper layers of the rete mucosa as a dark shading, passing gradually into the blackish layer on the free surface of the epithelial layer.

**Fig. 4.** A filament near its distal extremity stained with acid fuchsin and picric acid; 3 mm. Zeiss apochrom. objective, 140 aperture, 4 projection eyepiece. In the irregular loose spreading branches of the filament are seen the refractile granules, some of large size.



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I.

A CONTRIBUTION TO THE PATHOLOGIC HISTOL-  
OGY OF HYPERKERATOSIS LINGUALIS.  
(HAIRY TONGUE.)\*

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The condition, commonly known as hairy tongue, has been the subject of much clinical description, and recently, also, of considerable bacteriologic study. No account of its pathologic histology has, however, to my knowledge, been published, except what could be obtained from an examination of the filamentous processes removed by scraping the surface of the tongue.

The affection has been generally regarded as a hyperkeratosis of the filiform papillae of the tongue and distinct from the so-called black tongue or *nigrities lingue mucorina*, a condition in which the blackening is due to the presense of a hyphomycetous fungus.

The special exciting cause is, as yet, unknown. Syphilis, the abuse of tobacco and alcohol, have been present in some cases, but with no constant regularity. By some

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\*From the Laboratory of the Massachusetts General Hospital.

writers it is thought to be due to the direct irritation of a special bacterium or fungus. Bacteriologic examinations have shown numerous micro-organisms to be present in the mass of hair-like processes and a mucor, bearing black sporangia, has been isolated, which, by some, has been claimed to be the specific parasite. Inoculation experiments have, however, been unsuccessful.

Two cases of hairy tongue, which have come under my observation, have allowed me to excise considerable portions of tissues for microscopic examination. Six specimens in all were obtained, which showed, except in minor details, similar histologic appearances.

#### CLINICAL HISTORY.

CASE I. Male, 50, first came to the clinic with mucous patches on both sides of the tongue, which otherwise presented nothing abnormal, the filiform papillae being well developed, but not excessively so. The patient was given mercury and iodid of potassium, internally, for a month. At the end of this time, the mucous patches had disappeared, and iodid of potassium was administered alone. Two months later, he came again stating that for the previous six weeks he had noticed a brownish discoloration of the dorsum of the tongue, gradually increasing in intensity, and becoming associated with a burning or stinging sensation along both sides of the organ.

Examination showed the whole of the dorsum, except in the region of the tip, to be covered with blackish, elongated filiform papillæ matted together, with a brownish tinge anteriorly, and a greenish one posteriorly. The longest of the papillæ were about one and a half centimeters in length, these being in the central and posterior portions of the affected area. From this point the papillæ gradually diminished in size, as the tip of the tongue was approached, in which region they presented nothing abnormal.

On scraping, the elongated papillæ could be readily removed, leaving a surface of essentially normal appearance. In the posterior and central portions of the affected area, there is seen, after the removal of the papillæ, a rounded elevated plateau with an even, flat top, about two

centimeters in transverse diameter, raised half a centimeter above the surrounding level, firm, slightly elastic in consistency, of the color and appearance of the surrounding normal epithelium.

The base and sides of the tongue show numerous large tortuous veins. A section was taken from the affected area a short distance in front of the elevated plateau above mentioned. Two other sections were subsequently removed in the immediate neighborhood.

CASE II. Male, 65 years of age. No history nor evidence of venereal disease. Moderate user of tobacco and light alcoholic liquors. Always in good health. Five years ago, for the first time, his attention was attracted to his tongue by the sensation of a foreign body near the base. Inspection then showed a blackish mat of hairs of about the same degree of development as at the present time. The hairs were scraped off by a physician, but grew again, reaching their former size in four or five months. The mat of hairs has been scraped two or three times a year since that time. The patient has had no discomfort from the hairs, except when they have grown long, the symptoms then consisting of the sensation as of a foreign body in the mouth, with a disagreeable taste. At the time of my examination of the tongue there was present on the dorsum a conspicuous triangular area, extending from the center backward to the region of the circumvallate papillae, the apex directed forward, the area exhibiting a blackish mass of compactly-matted hair-like structures lying flat upon the dorsum. The "hairs," on being lifted with the probe, were seen to have a length of two to three centimeters. On spreading apart the mass, there was seen in the posterior portion of the affected area a plateau-like elevation of the dorsum of the tongue, like a broad, flat wart, from two to three centimeters in diameter, raised about three or four millimeters above the surrounding level, with a rough surface, firm and unyielding to the touch.

Elsewhere on the dorsum the filiform papillae were unusually long, being from one to two millimeters in length.

In both of the preceding cases the closely matted condition of the long filaments over the elevated area above referred to made their removal necessary before specimens

of the underlying tissue could be excised. The filaments came away readily in coherent masses on gentle curetting. They were then floated in water, arranged in as nearly a natural and mutually parallel manner as possible, subsequently dehydrated in alcohol, and finally imbedded in paraffin. After this clearing away of the surface of the tongue had been accomplished, specimens from the elevated area were excised and fixed in Zenker's fluid.

The specimens of tissue from the anterior portion of the filament-bearing area were removed with the filaments still adhering, which could be done with only moderate difficulty, as these were neither so long nor so closely packed as on the surface of the elevated area.

**PATHOLOGIC HISTOLOGY.** The description of the histologic appearances in the sections is facilitated by proceeding from below upwards.

The muscular and submucous tissues are apparently normal.

The corium is, as a whole, increased to from two to three times its natural thickness, this increase being particularly due to a lengthening of the papillae. As the papillae exhibit no corresponding lateral enlargement, they present the appearance of slender cones, mostly pointed, a few only being somewhat rounded. This lengthening is due to an increase in the number of the component tissue cells of the corium, which show no individual abnormality. In the upper portions of the papillae a moderately pronounced cellular infiltration is apparent, evenly distributed immediately below the inferior margin of the rete mucosa, not penetrating the latter, showing no tendency to aggregation into groups, gradually diminishing inferiorly and ceasing at about the upper third of the corium.

The cells composing this infiltration are almost wholly small round mononuclear, having the character of small lymphocytes. A few plasma cells and polynuclear, fine-granular neutrophiles are found here and there, but no eosinophiles are met with.

Corresponding to the space between the conical papillae of the corium, the interpapillary processes of the rete

mucosa are seen to extend downward as conical prolongation with generally pointed tips.

The cells forming the basement layer of the rete mucosa are essentially normal in appearance, being columnar in outline with a large vesicular nucleus.

In the prickle-cells, immediately above the basement layer, alterations are observable, which become progressively more marked with each succeeding cell-layer. The first changes noted consist in the appearance of irregular vacuoles in the protoplasm of the cells, associated with a distortion and shrinking of the nuclei. As shown best by picric acid, these vacuoles are actual deficiencies in the protoplasm, due to a reticulation of the latter, which appears as a distinct network with delicate strands and meshes of varying size. The chromatin of the shrunken and distorted nucleus is collected into a few irregular, deeply-staining fragments.

As one proceeds upward from the lower layers of prickle-cells, the changes just described become in the superpapillary regions rapidly more pronounced, while in the interpapillary regions they are slowly and irregularly shown, many cells in the latter situation being but slightly altered from the normal. At a point ranging to from four to ten cell-layers above the basement layer, the nuclei of the cells begin to exhibit fragmentation and freeing of their chromatin as irregular, deeply-staining masses of varying size, while the protoplasm simultaneously exhibits larger vacuoles, from the disappearance of a certain number of the reticular strands. With these changes is associated the appearance of rounded granules of varying size in the vacuoles and along the cell-wall, having the staining properties of the original protoplasm of the cell. The cell-walls are well defined and distinctly thicker than normal, while the cells themselves appear more compactly joined.

To recapitulate in brief, the cells in this region exhibit a thickened wall, staining deeply with picric acid, eosin, and acid fuchsin; the originally homogeneous protoplasm shows a collection into threads and granules, staining, though less deeply than the wall, with picric acid, eosin, and acid fuchsin; the nucleus shows a fragmentation, its

chromatin particles staining with methylene blue, acid fuchsin and hematoxylin; with Unna's stain for keratohyalin, the chromatin fragments stain with moderate intensity.

In the squamous layer of epithelium, the cells occupying the superpapillary regions, show generally no indication of a nucleus, but are filled with granules and masses of basophilic and acidophilic reaction, the former predominating. The arrangement of these granules corresponds to the shape of the cell, so that they appear as more or less parallel rows and lines. The superpapillary epithelium is on its free surface, prolonged upward to form slender acuminate processes, composed of squamous cells, containing the characteristic granules just described, which are now arranged in a linear manner. From the summit of these processes, long slender filaments are given off. These are the macroscopically visible "hairs" and will be described below.

The horny layer of epithelium extends from the interpapillary region upward along the margins of the acuminate processes into the filaments. Sections stained with acid fuchsin and picric acid show that the characteristic keratin stain first appears in the interpapillary region of the epithelium as an irregularly outlined inverted cone, of which the base forms the interpapillary epithelial surface. From the base of the cone the keratin stain runs upward along the margins of the acuminate processes as a sharply defined broad band.

Examination of this interpapillary keratin cone shows that the keratin first appears at a distance of ten to fifteen cell layers below the surface as a light red wash evenly laid over both protoplasm and cell wall. Its appearance and the intensity of its development have no relation to the basophilic granules previously described, for it is at times found in cells, whose nuclei although flattened or shrunken show no dispersion of their chromatin, while other cells in the immediate neighborhood, with free lying fragments of chromatin, do not exhibit the keratin reaction. Along the margins of the acuminate processes, the keratin stain is evenly laid over both the walls of the flattened cells and their interior lines of granules which stain more deeply red,

and are thus recognizable where the keratin overlay is not too intense. With Unna's stain for keratohyalin (of hematoxylin followed by potassium permanganate) the keratin band does not stain, although, as previously stated, the basophilic granules are stained with moderate intensity. With acid fuchsin followed by polychrome methylene blue, the keratin layer exhibits a light-blue color, in which the deeper blue granules are conspicuous.

A filament or "hair" has the appearance, in longitudinal section, of a long slender feather, with a central shaft, and lateral webs. The shaft is composed of long, flattened, closely oppressed cells, exhibiting the reaction for keratin, and containing, in their interior, lines of basophilic granules similar to those found more deeply in the epithelium. From this central shaft the lateral branches forming the webs are given off in an imbricated manner, radiating outward and downward.

An examination of an unstained longitudinal section of a filament under a low power shows that the lateral branches given off from the first two or three millimeters of the proximal portion of the shaft are without color, while from this point towards the distal end and progressively increasing in intensity, a brownish coloration of the lateral branches is visible. This coloration is seen on an examination of unstained specimens under a high power to be due to the presence of round, highly refractile, yellowish brown granules, ranging in size from those scarcely perceptible under a one-twelfth oil immersion to others, equalling a red blood corpuscle in size. The smallest granules are found in the proximal portion of the filament, where they are situated in the interior of the fibres composing the lateral webs. Towards the distal end the granules become progressively larger, and many are found lying free between contiguous fibres. These granules do not stain with eosin, picric acid, or acid fuchsin. With polychrome methylene blue, they take on a light green color, with acid fuchsin a reddish orange, but do not seem actually to stain. The fibre of the lateral webs are long, slender, homogenous structures staining with eosin and picric acid. Thus a filament stained with acid fuchsin followed by picric acid shows a red shaft with yellow webs.

On staining a longitudinal section of a filament for bacteria there is seen to be distributed between the lateral fibres of the web a characteristic bacterium in great abundance. It presents the form of rods, about the width of the hay bacillus, six to eight times longer than broad, straight with slightly rounded ends, and generally joined with others end to end, forming series of four to ten. They stain evenly throughout their length and stain by Gram. The first growth of this organism is found where the refractive granules begin; namely, a point two or three millimeters from the proximal end of the filament, increasing correspondingly in abundance toward the distal extremity. They outnumber greatly all other forms of bacteria which are chiefly cocci and found along the outer margin of the web.

*Summary.* The condition under consideration is thus seen to consist histologically in a papillary enlargement and small round-celled infiltration of the corium, together with protoplasmic reticulation, nuclear degeneration, and excessive keratin formation in the epithelium, the latter on its superior surface being prolonged upward to form filamentous processes, containing peculiar refractile pigmented granules, with which a characteristic bacterium stands in intimate association. It is of interest to note that the hypertrophy affects all layers of the mucous membrane and reaches its greatest development in the posterior and central portion of the dorsum. The condition appears to be primarily of the nature of a chronic inflammation with secondary alterations in the epithelial cells.

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## II.

### CYSTS OF THE EXTERNAL AUDITORY CANAL— REPORT OF A CASE.

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PHILADELPHIA, PA.

Both retention cysts and new cystic growths are occasionally observed developing from the external ear, but they are rarely found in the auditory canal, and especially those of independent formation. The retention cysts of the sebaceous glands of this part occur more frequently, Toynbee<sup>1</sup> having found this form of tumor, ten times in 1013 cases at autopsy. One is especially impressed with the lack of information on this subject by reference to the text books on otology, the majority of authors making no mention of cysts in this location, while a few dismiss the subject in a scant line or two, and merely state that this form of tumor may occur.

Among pathologists considerable differences exist as to the proper definition of a cyst, its usual meaning being a closed cavity containing fluid or semifluid contents, and from the nature of these contents it is usually spheroidal in shape, but the contour is to a certain extent dependent upon its location and position in regard to surrounding tissues and the pressure exerted upon it. Another describes a cyst as a hollow tumor, whose wall is formed by a continuous membrane, covered with epi—or endothelium and the central cavity is filled with fluid, semifluid or solid contents, excreted or secreted by the membrane. This description being a most conservative view, of necessity excludes a great many tumors containing a hollow cavity filled with liquid and answering to all practical essentials that of a cyst, but lacking a wall covered with epithelial cells. Still another definition is that of a cavity containing liquid or pultaceous material, which is separated from the surrounding structures by a more

or less distinct capsule, and it may be a new formation or a preexisting structure which has become distended by its own secretion or by extravasation into it. This latter definition to my mind being the best and most complete, in addition, practically classifies cysts into two major divisions; those occurring as a result of new tissue development and those resulting from retention of secretion in an already existing cavity. These two classes have also been called cysts of retention and cysts of disintegration and they may contain serum, mucus, colloid material, blood, sebaceous matter, cholesterin and derivatives from epithelial ingrowths, as in dermoid cysts.

Owing to the many causes entering into their production, classification is somewhat difficult, many authors classing them under the general terms of simple and compound; with the latter the otologist has nothing to do as compound cysts do not occur in the ear, all the cases recorded consisting of but one cavity, forming the simple cyst. According to the mode of the origin cysts may result from dilatation of previously existing closed cavities; from retention of secretion of a glandular structure; as part of a new growth; or by a developmental error. The case of aural cyst here presented evidently belongs to the third class mentioned, as microscopically it presented the features of softening and disintegration of connective tissue cells, the fluid contents resulting from the tissue metamorphosis.

M. H., female, age seventeen years. Suppurative otitis media of both ears for over one year. Has never had any serious illness, and the aural discharge came on without pain and with no apparent cause. The left ear presented the usual appearances of chronic suppuration with a large perforation in the posterior inferior segment of the tympanic membrane, while projecting from the right ear and entirely filling the lumen of the meatus was a glistening, pale tumor. This resembled to a marked degree a serous cyst, and was covered with a purulent secretion escaping from the suppurating middle ear, and giving it this appearance by macerating its surface epithelium. Probe pressure caused no unusual tenderness and elicited the feeling of a tense sack filled with a watery fluid. The

blood supply was poor, and no vessels could be seen ramifying over its surface, and it was attached to the superior wall of the canal by a rather large flat pedicle. The cyst was removed intact by snare under cocain anesthesia, bleeding was slight, and it was then seen that the growth originated on the superior canal wall at the junction of the cartilaginous with the osseous portion. When removed it measured twenty millimeters in length, by seven in breadth, and on section contained a serous fluid almost myxomatous in nature and not as watery in character as we were led to suspect by palpation when the tumor was in situ. Microscopically it consisted of an external surface of flat epithelial cells not taking the stain well on account of necrotic changes as a result of the maceration in the ear discharges. Under this was a thick layer of cuboidal epithelium sharply demarcated from the third layer of connective tissue cells, irregularly arranged and shaped from the pressure of the fluid contents; the bloodvessels of the walls were few in number, small in size and sparsely disseminated. The fourth and inner layer was composed of the same cells with an admixture of fibrous tissue and granular debris forming a well defined wall around the fluid contents.

As isolated glands are irregularly scattered over the auditory canal, especially at the junction of the osseous, with the cartilaginous portion, the cyst undoubtedly sprang from one of these, and while at first sight it presented the appearance of a broken down sebaceous gland, it became apparent, on microscopic examination, that it had developed as an independent formation, and the cyst cavity had further increased in size from that of its original capacity by the diminution of nutriment and subsequent degeneration and liquefaction necrosis of its inner containing wall. The history of the case, as regards its growth, corresponds with what we are familiar with in the tardy development of cystic tumors, in this case having existed for one year. Frequently a number of years pass before the growth reaches a size of any magnitude. On account of the slow growth it adopts itself to the parts, and the shape is altered, corresponding to the locality where it develops, while in cases of longer duration, the pressure from the

cyst may produce dilatation of the walls of the canal. The bone may also be absorbed from the pressure, as in a case cited by Toynbee<sup>1</sup>, in which both the inner and outer walls of the mastoid process had been absorbed by the slowly increasing growth.

When small in size, they usually remain unknown to the patient, and are only discovered accidentally during an aural examination for other purposes, but as their size increases, we have the usual symptoms of canal obstruction as may be produced by any non-irritating foreign body. The hearing for air conduction is to a greater or less extent impaired, depending upon the amount of obstruction that exists to the sound waves, while bone conduction remains normal and autophony may be complained of. Tinnitus is also present, and the symptoms differ in no way from those due to a mechanical obstruction. In this case the external canal was completely filled with the cyst, and it resembled in shape a finger of a glove, exactly corresponding to the lumen of the canal. The presence of a growth, therefore, when it projects from the meatus, is readily appreciated, even by the patient, and when ulceration or suppuration takes place, as the result of pressure or inflammation, symptoms calling attention to the part, are prominent. Usually, however, no subjective symptoms are noticed while the growth is of small size; there is no pain and no discharge, and the cyst may remain small and undergo no change for a number of years. Even when it increases to a size incomparable with the calibre of the canal, pain or even tenderness is not noticed, especially in those cases where the dermal covering remains intact, the patient barely feeling firm pressure with the probe as the sensibility of the parts is obtunded to a considerable extent.

Cystic tumors of the canal may originate in two ways: First, by the gradual accumulation within a pre-existing gland cavity, of the products of its own secreting membrane. Secondly, it may arise by independent formation in the tissues by softening and liquefactive changes, the liquid or semisolid material so produced compressing the cells in the immediate proximity, and these undergoing more or less fibroid change, ultimately form the cyst wall.

It may also be independently produced by the collection of fluid between connective tissue cells, these areas coalescing and fusing into one large cavity, and the surrounding tissues becoming condensed, forming a well-defined retaining wall. A third way by which the cystic tumor may independently originate, exclusive of glandular retention, is by the formation of a fibrous tissue wall around a foreign body, such as a mass of coagulated blood, and later, central liquefaction necrosis taking place.

The structure of the aural cyst, as with that found in other localities, varies with its mode of origin, that is, whether it results from pre-existing structure, such as the retention of secretion in a gland, or whether it develops as first seen from newly-formed cavities. The case presented in this paper, microscopically, well demonstrates the latter in the absence of an endo- or epithelial layer of cells, surrounding the tissues from the fluid contents and forming the innermost cell layer. If of a pre-existing cavity, the epithelial layer is invariably present, but in infrequent instances, when of new formation, an endothelial layer may also be seen, covering the fibrous capsule, especially if the growth be of long duration.

Usually the cyst is isolated and is attached to the adjoining tissues by a large sessile base or it may be a small pedicle, while in some cases the wall may not even form a distinct structure but will be composed of the surrounding tissue which has undergone fibroid change and is more dense in character than otherwise. Unless the contents have undergone calcareous change or have become organized, the cyst is soft and compressible and if small, can be pushed aside with the examining speculum. The location of the glandular tissue in the canal wall gives a clue to the almost constant site of cystic growths at the junction of the cartilaginous with the osseous canal, as the glands are here in larger number than elsewhere in this region and this is especially so on the superior wall, the site from which it will be found that these growths develop. Another factor of considerable import in the choice of location, is the natural constriction at this point, forming the isthmus of the canal and being from its contour the point of greatest irritation. The periosteum and

osseous tissues not being involved in the growth, but the dermal lining alone is concerned in its production.

Gruber (2) reports an interesting case in a male, age fifty-three years, who complained of tinnitus and a feeling of occlusion in the right ear for several months. The watch was heard on contact and bone conduction was normal. The right canal was occluded near the external opening by a soft and elastic growth covered with skin, completely filling the canal and with a broad base on the anterior wall. An exploratory puncture was made and serous fluid obtained, the cyst was then opened with a crucial incision and curetted with a sharp spoon with a favorable result. Buck (3) has had but two cases under his personal observation. In one a small yellow body covered with a thin envelope of epidermis and containing cheesy material, projected from the anterior and upper wall of the osseous canal just beyond the cartilaginous junction. The cyst in the second case was somewhat larger than the first, was slightly constricted at the base, contained cheesy contents and developed from the superior wall of the canal near the upper limit of the tympanic membrane. It was but slightly sensitive when touched with a probe and, while quite firm, was not as solid as an exostosis.

Othematoma may extend from the auricle to the external canal and although of a cystic nature inasmuch as it consists of an irregular cavity containing blood, yet there are no reasons why it should be mistaken for a cyst and under no circumstances should it be classed with these formations. Both furuncles and exostoses may be confused with cysts, but the former is attended with pain and all the symptoms of acute inflammation with local infection and it seems almost impossible that an error in the diagnosis of this condition could be made. Exostoses, however, present more similarity to a cyst, but the history of the case and palpation with a probe will readily demonstrate the true condition. In a case of the nature here reported accompanied with the profuse discharge of chronic otorrhoea, some difficulty is experienced in ascertaining the nature of the affection, as the middle ear cannot be investigated until the obstructing mass is removed and when it

has been macerated in the discharge, one is somewhat at a loss to determine the source of the pus formation.

Large indolent granulations simulate to a marked extent this appearance, but palpation will aid in the diagnosis and when the contents consist of hardened material exploratory puncture will clear up any doubts that may exist. The cyst itself may be the cause of the otorrhoea by ulceration and suppuration and spontaneous cure may be effected in this way, but this termination in the auditory canal is improbable and is mentioned only as a possible contingency.

<sup>1</sup> Toynbee, quoted by Gruber, Diseases of Ear.

<sup>2</sup> Joseph Gruber, New York Polyclinic, Dec. 15th, 1897.

<sup>3</sup> Buck, Diseases of Ear. Third Edition.

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### III.

## THE USE OF THE SUPRARENAL EXTRACT IN DISEASES OF THE NOSE AND THROAT.\*

BY W. H. BATES, M.D.,

NEW YORK.

I desire to introduce to your notice this evening the value of the aqueous extract of the suprarenal capsule, in the therapy of the nose and throat. To say that it is a powerful astringent does not accurately describe its unique action, which, even after six years' experience, daily arouses my admiration and wonder. In less than one minute after its application to an inflamed mucous membrane, the nose for example, the parts are blanched even beyond the normal. This effect is decided, startling and constant; in no case have I failed to produce the characteristic whitening. The effect is increased by repeated instillations or by the use of stronger solutions. The extract acted equally in inflammations from any cause. The cause of the redness had no effect on the result. When the nose was inflamed, after a cautery application, the mucous membrane was whitened by the extract as well as in inflammation from local infection or as a complication of general disease. The effect is usually temporary. In most cases, after half an hour, the parts look as they did, before the extract was used. The extract is not irritating. It has no anesthetic property, and when pain was relieved by its use, the benefit came from the lessened congestion produced by the extract. A tolerance is not acquired by its daily use in the nose. No secondary effect has been observed, the mucous membrane not appearing more congested after the effect of the extract had worn off. Furthermore, the extract is not poisonous. In one case, eight ounces of a one per cent. solution were

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swallowed, without causing any apparent disturbance, though the hypodermic administration is painful.

I have used the extract six years in 2,000 cases, more than 15,000 times in hospital and private practice in the treatment of diseases of the eye, ear, nose and throat. It has passed the experimental stage of a new drug with me, and I employ it without hesitation in all cases in which I wish to relieve congestion of the mucous membrane.

*Preparation of the Aqueous Solution.* One part of the dried and pulverized gland of the sheep is mixed with ten parts of water. The mixture stands five minutes, and is then filtered. The filtrate contains about one per cent of the extract, and is now ready for use. The solution should be prepared fresh when needed. After three hours, at the ordinary temperature of the air, 70° F., the solution usually shows a change in color and that it has become less active. It soon becomes offensive from the growth of bacteria, and has then caused infection of the eye and nose. I have not seen any bad results from the use of fresh solutions. The dried glands keep indefinitely and can be obtained from Armour & Co., Chicago, Ill.

The solution of the extract, when properly prepared, is of a light-brown color, and when applied to the mucous membrane of a normal nose, it will bleach it white in one minute. Sterile solutions of the extract, when protected from daylight, are active after six months. Cold preserves the aqueous solution of the extract.

As it is troublesome to make a fresh solution when needed, efforts have been made to preserve it, by the addition of different substances. I have experimented with boric acid, camphor, naphthalin, sodic chloride, glycerin, carbolic acid, trikresol, bichlorid of mercury, nitrate of silver, protargol, alcohol, ether, chloroform, sulphate of iron and other chemicals, to prevent the solution of the extract from spoiling. All were unsatisfactory, either because they precipitated the active principle or interfered with its action in the nose, or else were inefficient. It was also observed that the addition of cocain to the aqueous solution, lessened the activity of the extract. Astringents, when mixed it, interfered with its action. From

these and other experiments, I have come to the following conclusion:

The activity of the suprarenal extract is lessened by mixing it with other substances.

Dr. J. J. Abel<sup>24</sup> has isolated the active principle of the suprarenal, which he finds to be an alkaloid, and has named it "epinephrin." He recently sent me a solution of bisulphate of epinephrin, about one per cent(?). I found it active and non-irritating. Its great advantage was the fact that it did not spoil in solution, thus obviating the trouble of preparing fresh solutions when needed.

When exposed to the light, the active principle was precipitated in three days. In the dark the solution has preserved its properties six weeks. I am much pleased with epinephrin bisulphate and believe that it can be used for all the purposes of the freshly prepared aqueous extract of the dried gland.

*Chemical Properties.* The extract is very soluble in water, insoluble in strong alcohol, chloroform and ether. Vulpian<sup>29</sup> discovered in 1856 that when a drop of tincture of iron is added to the aqueous solution, an emerald green color appears. I have not observed this phenomenon to occur with extracts of other glands. Nitrate of silver precipitates the suprarenal extract from its solution.

*Physiologic Properties.* Oliver and Schäfer<sup>28</sup> find that the extract increases the tone of all muscular tissue by direct action. The suprarenal capsule is necessary to life. Its removal is followed by symptoms of great muscular weakness and death. The intravenous injection of the extract raises the blood pressure enormously. The peripheral arteries are contracted. Their paper contains an extensive bibliography.

*Therapy.* In the treatment of diseases of the nose and throat, it is important to remember that the extract is an astringent, and nothing else. It does not cure any disease. Symptoms caused by congestion are relieved temporarily. Headaches from nasal occlusion and pain in swallowing from congestion of the pharynx or tonsils are benefited. The pain from some syphilitic and tubercular ulcers has been relieved by its astringent effect. The examination of the nasal chambers is facilitated by contract-

ing hypertrophies of the turbinated bodies with the extract. For this purpose it is superior to cocain.

The extract has been used as an adjuvant to cocain. Short operations in the nose, when the mucous membrane is not inflamed, are usually painless with cocain alone. But in nervous people, the nose inflamed, the parts congested after a recent operation, prolonged operations and in bloody operations, cocain does not usually secure complete anesthesia. In these cases the extract is of great service, when used with cocain.

The extract has also been used as an adjunct to the cautery. The mucous membrane is first whitened, and the hypertrophy of the turbinated body appreciably lessened or abolished by the extract. The application of the cautery is followed by a greater benefit and with less reaction than when the extract is not used. The extract increases the effects of other astringents when used first to lessen the congestion of the mucous membrane. It changes a severe inflammation into a mild one at once, or abolishes the congestion altogether, so that the usual remedies for inflammation are better able to control the disease. The healing of ulcers is promoted by the wonderful power of the extract to whiten and contract granulations and lessen congestion.

The reaction after operations is lessened by the astringent property of the extract. The time of healing is very much shortened. I believe that Dr. Joseph A. Mullen was the first to publish the value of the extract in nasal operations.

Dr. Henry L. Swain<sup>15</sup> has made a careful study of the use of the extract in the nose and throat. With it he was able to operate almost bloodlessly even in a "bleeder." A tolerance was not established by its daily use in the nose for weeks at a time, as happens when cocain is used as a nasal spray. In chronic hypertrophies he found only a temporary benefit from its use. In acute, rhinitis, inflammation of the three tonsils, faucial, lingual and pharyngeal—pharyngitis and laryngitis, the extract was of decided benefit in affording relief. He observed no toxic or other bad effects from its use. A suprarenal "habit" was

not induced by the daily use of a nasal spray for weeks at a time.

*Nasal Hemorrhage.* The extract has been of great service in controlling nasal hemorrhage which has occurred spontaneously, or after operations. When properly used it is possible to do extensive operations with little or no hemorrhage. My method is to apply the extract until the parts are whitened, and then cocain and the extract alternately until local anesthesia is complete. A quick operation done painlessly is usually bloodless. If the operation be a protracted one, I stop and apply the extract and cocain alternately as soon as the parts become red or the patient complains of pain. If blood appears, I wait until the hemorrhage ceases and the parts become again pale, by using cocain and the extract frequently.

By this method large exostoses of the septum have been removed without hemorrhage. Asch's operation has been performed with very little hemorrhage and without pain. The extract has been used successfully to control hemorrhage in antrum operations by H. L. Wagner<sup>30</sup> and others. The extract prevents secondary hemorrhage in many cases, but not in all. It does not prevent hemorrhage from visible bloodvessels, and acts best when the parts are blanched white. It has no chemical effect on the blood, and neither prevents nor retards coagulation. In the following case, polypi were removed without hemorrhage by the use of the extract frequently during the operation:

A man aged 80 suffered from polypi which prevented nasal respiration completely. His son, a physician, told me that the removal of one polyp was followed by immediate hemorrhage, which was controlled with difficulty when cocain had been used alone. Secondary hemorrhage followed, and some blood came from the nose for three days. I operated, using the extract and cocain alternately and the parts were completely anesthetized. Five polypi were removed at one sitting without the appearance of a drop of blood at the operation or afterwards. One week later six more were removed without primary or secondary hemorrhage.

I am indebted to Dr. Moschcowitz for the history of the

following case of hemophilia, in which the extract controlled a severe urethral hemorrhage:

"A man aged 22 belongs to a family of "bleeders." After the extraction of a tooth he bled freely for three days. He had an alarming hemorrhage for five days after an incision of the meatus. An attempt made to dilate an urethral stricture with No. 17 F. was followed by a copious hemorrhage. The Doctor then used a solution of the suprarenal extract, syringing it into the urethra before the use of the sound. No. 22 F. was now introduced without any hemorrhage whatever. At successive periods No. 23 F. and No. 24 F. were also passed without hemorrhage. No. 25 F. was followed by some hemorrhage, and No. 26 F. by more. The extract did not prevent hemorrhage when No. 27 F. was passed, which was so profuse as to soil fifteen towels. The hemorrhage was promptly controlled by the extract. The patient had no secondary hemorrhage.

*Acute Rhinitis.* For the treatment of acute inflammations of the nose the internal administration of the extract is beneficial. A physician, aged 32, with acute rhinitis, placed five grains of the dried gland on his tongue, and allowed it to remain without swallowing. In three minutes he felt relief, the nose opened and the discharge ceased. The relief was temporary. A woman, aged 40, with acute rhinitis, obtained temporary relief in the same way. In hay fever, the internal administration has relieved the nasal occlusion and discharge for a short time. A physician aged 40, during an attack of hay fever last summer, after swallowing a 3-grain tablet, felt relief in five minutes. The nose opened, the discharge ceased, and his headache was relieved. Patients who have taken the tablets every two to four hours during an attack of hay fever, and by increasing or regulating the dose, have been made quite comfortable with this remedy alone. The relief obtained to the nasal symptoms by the internal administration of tablets of the dried suprarenal glands is always much less than can be obtained by the local use of the extract. The beneficial results obtained from the internal administration are variable—one reason for this being that the acid of the gastric juice interferes with the action of the ex-

tract. I believe more constant results are obtained by directing the patient to hold the tablets in the mouth until macerated, so that the extract may be absorbed before reaching the stomach.

Dr. Meierhof, of New York, has observed that in hay fever the extract is not beneficial when the nasal mucous membrane is pale. He has kindly furnished me with the histories of the following cases:

"CASE 1: Was a patient of about 48, who has been under observation for eight years but has been afflicted annually for the past fifteen years. His attacks come on in the early part of the summer or late spring, and last until about the second week in July. He never has had asthmatic symptoms in any of his attacks. Driving and railroad traveling always aggravate the symptoms. The nights were generally bad, interfering very much with sleep and making him generally miserable. In former years my treatment before and during his attacks seems to have ameliorated his symptoms, so that he would weather an attack through with less wear than formerly. When he came this year again with his prodromal symptoms of itching of the eyes only, I determined to wait until the attack became full-blown and then try the effect of the suprarenal extract. I can only say that from the first application of the usual solution the patient commenced to experience marked benefit, and from that time on relief continued by making one or two applications daily. The patient slept well and did what he pleased with entire impunity for the balance of the season. My experience with this case made me quite hopeful for any future cases that might come under observation.

CASE II: Was a woman of about 30 whom I saw at my clinic of the Mount Sinai Hospital out door department. Her case was one of the more chronic forms where there is a strong neurotic element. She complained of itching, sneezing and intermittent rhinorrhea. There was no obstruction to breathing, the mucous membrane was somewhat pale but not especially moist. Various remedies were tried without any success or even partial relief, and it was not until the local application of the suprarenal extract that any relief was given, and this was so marked

that when she returned for continued treatment she wore a smile instead of the haggard expression formerly. She still comes for treatment, but is apparently much improved.

CASE III: Was a patient of about 30, living at the seashore. I saw him in the middle of August, and I believe this was his third season of hay fever. His brother was also a victim to hay fever, Case IV, and a sister had chronic asthma and spent a good part of her time in the mountains. I saw this patient a few days after the attack had made its appearance, and commenced immediately with the suprarenal extract to the nose. The mucous membrane of the nose in this case was very watery and pale, the pallor giving the appearance of a piece of beef having been rinsed in water. The application when first made seemed to aggravate the symptoms for a short while, but a little later improvement seemed to follow. The patient was taught to use the extract at home, and on the whole thought he suffered less this year than in his previous attacks. At least he lost fewer night's sleep than formerly.

CASE IV: A brother of Case III, came also about the middle of August, and spent the entire summer in the city. Asthma accompanied his attack and he had his trouble for a number of years. The mucous membrane was very watery and had the typical washed beef appearance. The patient was irregular in his treatment, but on the whole thought he had been benefited by the application of the suprarenal extract; but as far as I could observe I honestly could see no improvement.

CASE V: Was a lady of about 38 years, who also had the asthmatic accompaniment with her hay fever. I saw this case also in the middle of August. I made two applications of the suprarenal extract, from which she seemed to feel worse, and she then discontinued her visits. Here the mucous membrane was also very watery and had the peculiar pale color.

CASE VI: Was a boy of about 12, who suffered last year from an attack. I saw this patient about the middle of August. The mucous membrane was pallid and watery; a deviated septum and also a spur complicated the condi-



tion. Suprarenal extract was applied at the office by me, and at home by the patient, with the result that the patient required one to two handkerchiefs, where before treatment seven or more were required daily, and he could breathe with his mouth closed; there was also more restful sleep than before."

Dr. S. S. Cohen<sup>21</sup> of Philadelphia, is a sufferer from hay fever. He obtained relief by taking tablets of suprarenal gland, internally. Five grains were placed in the mouth and dissolved slowly. In fifteen minutes the nose felt freely open and the discharge ceased. The dose was repeated at irregular intervals three or four times daily. No secondary effect was observed. He noticed no disturbance in his circulation from the tablets.

He wrote to me that in 1899 he treated six cases of hay fever; five successfully, and one unsuccessfully, by the combined local and internal use of the drug.

James E. Newcomb,<sup>16</sup> E. W. Wright,<sup>18</sup> J. Clarence Sharp<sup>19</sup> and Beaman Douglass,<sup>20</sup> have also recommended the use of the extract in hay fever. Douglass' paper covers the ground in a very able manner.

*Chronic Rhinitis.* Some forms of chronic congestion and swelling of the mucous membrane of the nose have been decidedly benefited by the local and internal use of the extract. The nose opened and the discharge ceased. The relief was always temporary, and no chronic case was cured by me with the extract alone. When combined with other treatment, the extract hastens the cure.

*Syphilis of the Throat.* A woman, aged 45, came to the dispensary with a secondary eruption. The hard and soft palate, tonsils and pharynx, were red, swollen, ulcerated and exceeding painful. The patient had great difficulty in swallowing. The action of the extract in this case was gratifying. The redness disappeared, the swelling became less, and the patient swallowed without any pain whatever. Two days later the patient reported that the pain had returned, but that it was much less than before treatment. The patient recovered after a course of mixed treatment.

The extract only gives temporary relief in syphilis of the throat.

*Tonsillitis.* The redness, swelling and pain are relieved temporarily by the use of the extract. This is true of all forms of tonsillitis, including peritonsillar abscess. I believe the duration of acute tonsillitis is much shortened when the extract is combined with other treatment. In the operation for tonsillotomy, primary and secondary hemorrhage, are appreciably lessened by the use of the extract, before and after the operation.

*Acute Laryngitis.* The extract, when applied locally, whitens the mucous membrane of the larynx. The voice is improved. Curtis<sup>14</sup> has used it successfully with singers whose voice was affected by acute laryngitis. I have seen immediate improvement in the voice follow after the internal administration of the extract.

*Tubercular Laryngitis.* In one case with swollen arytenoids and tubercular ulceration, the extract whitened the congested membrane, lessened the swelling and relieved the pain on swallowing. The voice became more natural, stronger. The relief was temporary.

*Acute Edema of the Throat.* In two alarming cases the relief obtained from the use of the extract was magical. Dr. H. Boeker treated the following case:

A man, aged 40, with erysipelas of the head and neck, developed throat symptoms. The doctor was sent for hurriedly in the night, and found the patient breathing with great difficulty. The tongue, palate and pharynx were swollen. The air passed through the larynx with a whistling sound. The symptoms were so urgent that an immediate tracheotomy seemed necessary. The suprarenal gave immediate relief. Five grains of the dried gland were placed on the patient's tongue. The dose was repeated hourly for four hours and then stopped. The relief was permanent.

Dr. S. S. Cohen had a case of angioneurotic edema of the pharynx and tongue in which he believes life was saved by the local use of the dried gland.

#### CONCLUSIONS.

1. The suprarenal extract is a powerful astringent without objectionable properties.
2. The solution of the extract should be prepared fresh

when needed, and should not be mixed with any other substance.

3. In the treatment of diseases of the nose and throat, other remedies should be employed with the extract.

Finally, since the secretion of the suprarenal gland is one of the fluids necessary to life, its administration as a drug causes less physiologic disturbance than a foreign substance, and this fact may explain why it has so universally been of benefit, and why its use for six years by so many physicians has not discovered any serious objection to its employment in every case of congestion of mucous membranes. And I wish to repeat what I have said before in previous papers, that within the sphere of its activity, we have absolutely no other substance which can take its place.

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- <sup>22</sup>Cohen, S. S.—The Philadelphia Polyclinic, September 17, 1898.
- <sup>23</sup>Cohen, S. S.—Journal of the American Medical Association, July 10, 1897.
- <sup>24</sup>Abel.—Johns Hopkins' Bulletin, July, 1897.
- <sup>25</sup>Abel.—American Journal Physiology, March 1, 1899.
- <sup>26</sup>Abel, Hoppe-Seyler's Zeitschrift für Physiologische Chemie, XXVIII, Heft 324, 1899.
- <sup>27</sup>Abel.—Johns Hopkins' Bulletin, September-October, 1898.
- <sup>28</sup>Oliver and Schäfer.—The Journal of Physiology, July, 1895.
- <sup>29</sup>Vulpian.—Compt. Rend., XLIII, 663-665.
- <sup>30</sup>Wagner, H. L.—N. Y. Medical Journal, December 24, 1898, 936.

50 East 64th Street.

#### IV.

### NEW INSTRUMENTS FOR THE CORRECTION OF IRREGULARITIES OF THE NASAL SEPTUM.

HENRY W. WANDLESS, M. D.,

NEW YORK.

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STRUCTOR, IN OPHTHALMOLOGY UNIVERSITY AND BELLEVUE  
HOSPITAL MEDICAL COLLEGE: MEMBER, NEW YORK UNI-  
VERSITY, NEW YORK COUNTY, NEW YORK STATE  
AND AMERICAN MEDICAL ASSOCIATIONS.

The object sought in the correction of irregularities of the nasal septum is to establish or help to establish and maintain normal functional conditions either in the nose itself, or to relieve some reflex irritation in some other organ, more or less remote from it.

I say functional, because the majority of irregularities of the septum, which are certainly abnormal conditions, do not produce any functional disturbance whatever. I advise, therefore, operative interference in those cases only which I know, or have good reasons to believe, interfere with or unfavorably influence normal functional conditions in the nose or reflexly in other parts.

The instruments included in this set were devised some years ago, and some of them have been published. These have been improved since and that is my excuse for calling attention to them the second time.

In the original set each blade had a handle and was a separate instrument, and as there were no provision for shifting the position of the blade, to cut either upward or downward, right or left, it was necessary to have two of each, making eight separate instruments in all, whereas by the improvement in (Fig. 1) I have reduced the number to four blades and one universal handle. Not only is this improvement a saving in cost, and number

of pieces, but also by means of several notches on the heel of each blade, it may be set in five different positions as may be desired for any special manœuvre, or to suit the fancy of any individual operator. Some prefer a straight saw, some one set at angle of thirty degrees, and others yet prefer one at sixty degrees angle. On the heel of each blade are five notches for the five different positions. The central one gives a straight instrument, the two on either side give the blades an angle of thirty and sixty degrees for cutting either upward or downward. There is no special way to hook the blade over the rivet in the handle, as it cannot be done wrong. When the blade is hooked in and placed in the position desired, by turning the thumb screw on the end of the handle to the right, a wedge-shaped plug is driven into a notch on the blade's heel which locks it securely.

To change the angle or position of the blade, simply loosen the thumb screw and shift the blade without removing it from the handle.

These instruments are put up in hard wood cases, or may be purchased without case, either in full set or parts of a set as desired. A full set has the following instruments: One straight saw, two groove saws, one rasp, (Fig. 1), six intranasal tubes, (three right and three left (Fig. 2), (and one heavy spatula.

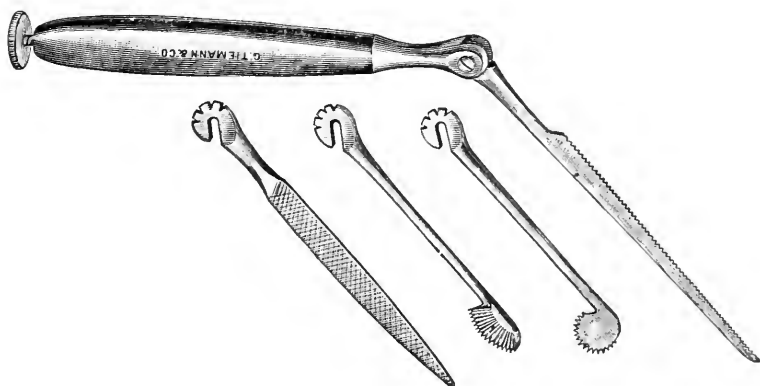


Fig. 1.

The straight saw does not differ in appearance from the common saw in use. The metal is stiff and the teeth are

short and thick, which prevents it from hanging on sharp spurs or spicula, and from pinching. One groove saw is thin and cuts a narrow uniform groove, while the other is wedge-shaped and cuts a V-shaped groove, and is used especially upon the convexity of a deflection. When the septum is very thick, and obstructs respiration in this way, a couple of grooves sawed parallel with each other and the A-shaped partition between them chiseled out, often sufficiently increases the breathing space.

The rasp is used to smooth down rough surfaces left after using the saw, chisel or burr, and to remove small spurs. It is better for these purposes than any other instruments because it takes away less of the soft tissues. It does not readily take hold of the soft structures, but pushes them before it, attacking only the hard structures. All of you have noticed this in filing the finger nails how rapidly the nail is removed without injuring the soft parts.

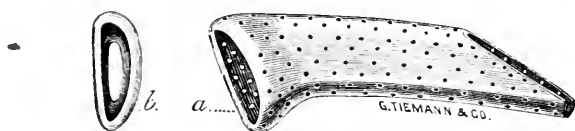


Fig. 2.

The intranasal tubes are rather longer than those generally in use. The distal end is beveled off from above down, which allows it to ride under the turbinate gaining in length, and thus gives better leverage. The tubes stay in position better. They are perforated all around from the escape of fluid discharges. The outer end is made to conform to and is covered by the end of the nostril which holds it accurately in position. In removing the ordinary sized spur or nodules, I have nothing new to add either in the mode of operating, or in the technic.

In removing small sharp spurs I use the rasp. In very thick septa, which by their thickness interferes with normal respiration, the only thing to do is to groove them, and the method suggested above has given fair results. In all operations for the correction of a deflected septum, I use the groove saws in preference to a knife, scissors or any sharp cutting instruments. I like the spatula for straightening up the septum, because the parts are seldom much

injured by it. The forceps seem to me to do injury by breaking or crushing the septum unnecessarily.

Some of the advantages of this method of procedure are:

1. The patient gets well in a shorter time and with a smoother and probably a better operation.
2. Hemorrhage is less.
3. Wounding the membrane on the opposite side is generally avoided.
4. The saw cuts bone as well as cartilage.
5. The danger of permanent perforation or ulcer is greatly reduced.
6. When the mucous membrane on the opposite side is not injured the tube rests upon sound membrane.

Sometimes the upper or lower portion of the septum is too thick to bend, and will not allow it to be pushed into position. It then becomes necessary to groove it in its upper or lower part or both to weaken it. This may be done on either side of the septum. Again sometimes the concavity is very deep, and the surrounding structures so rigid that the septum could not be straightened, without providing for the redundant flaps. In this case, saw a crucial groove, or as nearly at right angles as possible. The flap thus formed will slide over each other, when the septum is straight while the redundant mucous membrane on the opposite side will fold into a pouch against which the tube will rest. Subsequently this pouch will greatly disappear. Always avoid, if possible, wounding the mucous membrane in the side in which the tube is to be placed. The tube may best not be removed until the septum is solid, which takes from two to six weeks. It is generally not necessary to place a tube in but one nostril. To take out the tube too early would allow the deflection to reform while the hard structures are yet green.

The usual antiseptic precautions are necessary. The after treatment consists in douching out both nostrils (through the tube in one side) two or three times daily, with some antiseptic solution, and notice, also when the swelling subsides that the tube is not too loose—it might possibly pass into the larynx.

General anesthesia, except for children, is not necessary,

in fact I prefer to have the patient co-operate in getting away the blood and mucus.

A 10 per cent. solution of cocain and a solution of suprarenal extract of the same strength is generally sufficient to render the operation almost painless and bloodless.

Patients who faint or become sick, may be placed in the recumbent position and the operation proceeded with. Some operators prefer the recumbent posture, but I find the sitting posture more generally convenient.

These instruments are made by Geo. Tiemann & Co., 45 W. 32nd St., New York.



V.

SOME IMPROVED NOSE, THROAT AND EAR  
INSTRUMENTS.\*

EDWIN PYNCHON, M. D., CHICAGO,

PROFESSOR OF RHINO-LARYNGOLOGY AND OTOTOLOGY, CHICAGO EYE,  
EAR, NOSE AND THROAT COLLEGE.

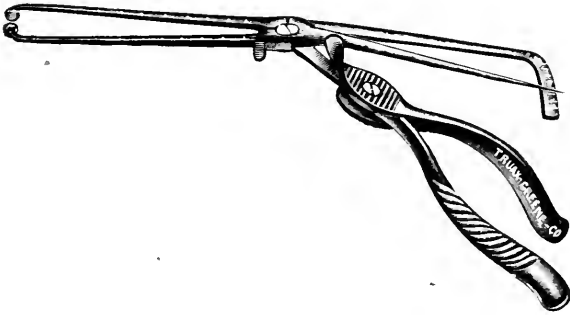


Fig. 1. Nasal Septometer ( $\frac{1}{2}$  size).

The new nasal septometer shown consists of two delicate non-crossing arms pivoted together at their exact centers and terminating at their distal ends in bulbous points bent inwardly so as to oppose each other and thus act as a calipers, while the opposite ends of these arms terminate respectively in an index needle and a measuring scale so the distance between the distal points is at all times accurately shown upon the gauge. A weak spring operates to bring together the distal points and at the same time to separate the handles which, when pressed together, cause separation of the caliper points. A device of this nature is often of great value in determining the exact thickness of the nasal septum at different points, particularly when the thickening is associated with deflection.

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\*Presented before the Chicago Laryngological and Climatological Society, Dec. 28th, 1899.

This adenoid curette is a modification of the Gottstein model with the addition of cutting side blades in accordance with the idea of Hartmann. The end cutting blade is made somewhat shorter than in the Gottstein instrument, and is so curved that it will reach the very apex of the naso-pharyngeal space. The end blade is furthermore placed at an angle whereby its cutting edge can accurately



Fig. 2. Adenoid Curette ( $2\frac{2}{3}$  size).

scrape all portions of the pharyngeal vault. The method of use is first to give the three vertical strokes the same as with the Gottstein instrument, after which the side cutting blades may be employed by curetting successively from either Eustachian prominence, down in the adjacent fossa of Rossenmueller, and backward therefrom to the median line. This instrument is made in two sizes, the smaller being for infants or children under four years of age.

I will also take the privilege of showing an improved nasal trephine and guard. As compared with the usual form it is much longer in the shank, thereby obstructing the view less and, at the same time, better facilitating operative work upon points far back upon the septum or



Fig. 3. Nasal Trephine and Guard ( $\frac{3}{5}$  size).

attacks upon the hypertrophied middle turbinal. The distal point of the guard terminates in a thin, flat projection which simultaneously serves both as a guide and a guard, and is so thin as to be capable of entrance between the middle body and the septum even when pressure contact is pronounced. These three instruments have been previously described in recent publications.\*

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\*Fig. 1. The Laryngoscope, Dec., 1899.

Fig. 2. The Medical Monograph, Feb., 1899.

Fig. 3. The Laryngoscope, Sep., 1899.

While the two former may be called new, or productions of the current year, the latter I have been using for the past three or four years.

I next show a tonsillotome of the Mathieu pattern in which the ring knife and shields are transversley curved on the flat in order to better conform to the shape of the faucial side walls. In this way the tonsil is more completely removed, as the cut is made deeper in the middle of the tonsil than when the usual flat blade is employed. Another incidental advantage of the curve is that it prevents the possibility of the instrument being put together with the cutting blade wrong side to, as sometimes occurs with

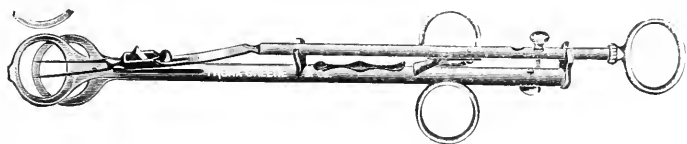


Fig. 4. Curved Tonsillotome ( $\frac{2}{5}$  size).

the form in general use. The barbs of the piercing needles are also removed, as they are always useless and sometimes harmful as, for example, should the ring knife break while in use, or should a calcareous mass be encountered. While I have never before publicly exhibited or described this modification I have had it in use for nearly ten years. The curve in the ring knife of the instrument shown (which is a No. 2) is that of a  $\frac{3}{4}$  inch radius. For this size of fenestra I think a one inch radius would be preferable.

The pair of saw blades shown, being a right and a left, are, like the tonsillotome, curved on the flat, and furthermore, like the tonsillotome, are not recent improvements, as they were designed some eight or ten years ago, though I have carelessly neglected to show or describe them at



Fig. 5. Saw Blade Curved on the Flat ( $\frac{1}{2}$  size).

an earlier date. They were made for me by Tiemann & Co., and were ordered through Chas. Truax & Co. of this city. Enchondromata are often met with which are so near to the nasal floor as to preclude the use of a flat saw blade. In such cases a curved blade can be much more satisfactorily employed, until the upward cut is well started,

when the operation can be completed with a suitable flat blade saw.

In figure 6 is shown a toothed spring tonsil forceps in which is provided inside of the terminal teeth a grooved or serrated surface on either blade so when closed to-



Fig. 6. Spring Tonsil Forceps ( $\frac{2}{3}$  size).

gether a side hold can be taken from either edge. This forceps is designed for use in doing a tonsillectomy by "electro-cautery dissection" when, owing to friability of the tissue, the more simple forceps with only the toothed ends will not take a sufficiently firm hold.

This head-band and mirror possess some novel features. The non-elastic band is so attached to the outwardly-bent ends of the metal head-plate as to obviate its touching the forehead for a space of about one inch on either side thereof. In this way the wearing of the head-band is more comfortable than when the contact is continuous,

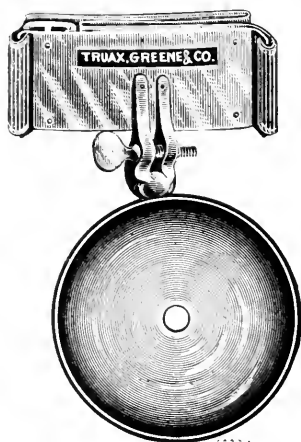


Fig. 7. Head-band and Mirror ( $\frac{1}{3}$  size.)

particularly in warm weather, and furthermore a greater solidity is derived through the points of attachment of the tape to the head-plate being thus elevated. The head-plate is of liberal size in order to give solidity, and is lined with sheet gutta-percha which is preferable to the usual

soft pad. The ball upon the back of the mirror is so attached to a projection therefrom as to be at its very margin, and thus a much greater range of mobility is secured than is given with the form in general use. The thumb-screw is large, and the socket-arms extra heavy and strong, and additionally so shaped as to favor increased latitude to the adjustment of the mirror.

The cautery handle is patterned after the Fleming handle which has been for many years a favorite. In comparison therewith this handle is both heavier and longer, and the hard rubber covering is in one piece instead of being in



Fig. 8. Cautery Handle ( $\frac{3}{5}$  size).

two parts fastened together with screws. The chief feature of difference however is that instead of the contact point being concealed within the handle it is wholly exposed and consists of two solid buttons very close together and so located that the circuit is closed when the contact spring is pressed against them.

For a long time I was annoyed in my use of the Davidson powder-blower by the powder becoming impacted with even a moderate air-pressure. Latterly I have found a



Fig. 9. Ear Extension for Powder Blower ( $\frac{2}{5}$  size).

remedy by having a very small hole made in the inlet pipe about one inch below the neck of the bottle. In ear work I employ a long slender extension tip.

I also show a post-nasal spray tip for the Davidson spray bottle which I have found to be invaluable. It is so wide



Fig. 10. Post-Nasal Spray Tip ( $\frac{4}{5}$  size).

and strong as to serve nicely as a soft palate retractor while spraying, which in my belief is an important point. It is particularly strong at the bend so as not to break, and throws three streams in fan-shape. I also use this tip for spraying the anterior nares, and for this purpose find it to be the most satisfactory tip I have used, as by the fan-shaped distribution of the spray the entire fossa from floor to attic is reached.

At times, after intra-nasal operations, there is a tendency for adhesions or synechia to form. Latterly, in order to prevent the formation of such adhesions, I have been using splints made of sheet hard rubber of about  $\frac{20}{1000}$  of an inch in thickness, and generally formed as shown in cut, though the shape can be varied to meet the

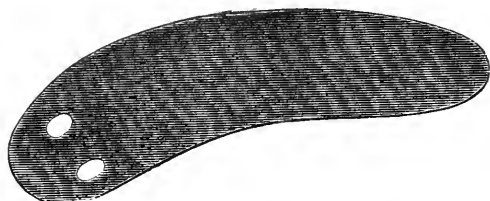


Fig. 11. Nasal Splint (full size).

requirements of each individual case. When slightly warmed the rubber can, with a curved shears, be easily cut in the shape required. A good way is to do the cutting while it is being held in warm water. The two holes at the forward end are to allow of the tying in of a narrow strip of nosophen gauze, with a knot on either side, so that by the increase of thickness the splint can not slip too far back in the nose. Being thin and yielding these splints are introduced easily and readily conform to the requirements of a tortuous passage.

Another little improvement which I have found to be advantageous is to have a very small hole made in my ear



Fig. 12. Ear Tip of Auscultation Tube ( $\frac{1}{2}$  size).

piece of my auscultation tube. It is at no time a disadvantage and sometimes by allowing a perceptible escape of air reveals a perforation not previously detected.

Finally I show a device for oto-pneumatic massage, to be used in connection with an electric motor pump, and attached to the pump hose at B. The improvement consists in the addition of an exhaust syringe, in combination with an opening in the ear-piece (A) which latter is

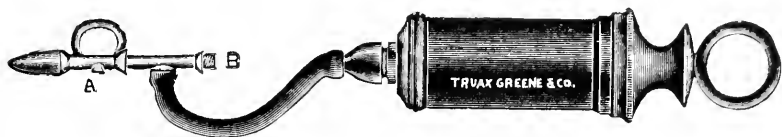


Fig. 13. Oto-Pneumatic Masseur ( $\frac{1}{3}$  size).

closed by the operator's thumb as suction is being applied to the retracted drum-head, thus allowing of a combination of slow and forcible massage with the rapid vibrations. When the syringe piston is being forced downward the hole is of course left open.

Columbus Memorial Building.

## VI.

### OSTEOMA OF THE AUDITORY CANAL. \*

THOMAS R. POOLEY, M. D.,

NEW YORK, N. Y.

On May 25, 1899, I was asked by my colleague, Dr. R. C. Myles, to see a patient of his in the Clinic of the New Amsterdam Eye and Ear Hospital. He was a sturdy, healthy-looking Italian 30 years of age; did not complain of pain, but came on account of deafness in the right ear, and obstruction of the auditory canal by a growth.

Upon examination, there was found to be a tumor situated just within the meatus, which almost completely filled the entrance to the canal, leaving only a narrow chink anteriorly. The obstruction as seen on inspection resembled the ordinary integument, but on pressure was found to be hard in structure, the skin covering its anterior portion gliding over it. The examination gave him no pain, the growth did not seem to be accompanied by any irritation or inflammation, the only complaint being of the mechanical obstruction of the ear and consequent deafness. He had only noticed its presence about six weeks before he came for advice, and there was no further history regarding its development to be obtained from the none too intelligent patient who could scarcely speak or understand any English. The diagnosis was uncertain. It was thought possible that it might be a polypus of a fibrous nature which had resulted from an otitis media chronica, an osteoma, or exostosis. To further determine its character, Dr. Myles removed a portion with a snare, but it so completely filled the canal that only a small piece was thus removed, which was plainly of a cartilaginous nature.

On June 2, during the absence of Dr. Myles from the

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, \* Read by title before the American Otological Society.



city, he came to me complaining of intense pain. There was now an enormous swelling both in front of and behind the ear. On pressing the swelling in front of the ear, and by passing a probe between the walls of the canal, a quantity of foul smelling pus escaped. There was a good deal of constitutional disturbance and a slight rise of temperature. Under these conditions I determined at once to make an attempt to remove the growth. The patient was put under ether. By passing a probe as well as I could around the growth, it seemed to be adherent only in one place to the posterior wall of the canal near the membrana tympani. This suggested the possibility of its removal by forceps only. I accordingly got firm hold of it as deeply as possible with a pair of Hinton's forceps and attempted to wrench it out; in the second attempt I was successful in doing so. Immediately following its removal there was an escape of a large amount of fetid pus. Examination for the point of attachment of the tumor was now made with the finger, and the place where it had been broken off found by the roughened bone which was most thoroughly scraped with a sharp spoon and much polypoid tissue removed. So far as could be ascertained, the membrana tympani was not perforated. The auditory canal was then loosely packed with iodoform gauze and a roller bandage applied. A macroscopic examination of the growth showed a tumor  $3/4$  inch in length by  $1/4$  in width; its outer part consisted of a dense fibrous or cartilaginous tissue, and its centre of bony structure; no microscopic examination was made. The patient was admitted to the hospital and kept in bed. An immediate subsidence of pain was followed by a good night, and the constitutional disturbance ceased at once.

The further progress of the case is soon told. The meatus and canal were daily cleansed by syringing with a carbolic acid solution, the discharge rapidly diminished and the swelling disappeared, until June 5, when the patient was discharged from the hospital, all swelling around the ear had gone, and there was no pain.

Otosopic examination showed the site where the growth had originated, to be in the posterior superior wall of the canal, close to the drum-head, and the membrane intact. There was still considerable swelling of the walls of the

canal, but hearing was good. For some time the patient came daily to the clinic to have the ear cleansed; there was a gradual cessation of the discharge, until it ceased altogether; the swelling, too, entirely disappeared, until the canal was of the same dimension as the other, and the hearing was fully restored to the normal.

The history of this case clearly shows that there was no connection between the bony growth in the auditory canal and a chronic suppuration of the middle ear; but that it was due to a circumscribed chronic periosteal inflammation in the osseous meatus. According to Schwartze, the spot of preference for caries of the meatus is the posterior upper wall, near the *membrana tympani*, corresponding either to the floor of the antrum mastoideum, or to the point where the antrum enters the tympanum. The presumption then is that from this point were formed polypus granulations, which gradually became converted into cartilaginous and bony tissues by a process of ossification extending from its base, until it grew so as to nearly fill the auditory canal, and reach the meatus. The tumor was osseous only in its center, and surrounded by a cartilaginous covering, which goes to show that the nature of such growths, whether spongy or compact, depends upon the more or less advanced state of the osseous structure.

An interesting feature in the case is that troublesome inflammatory symptoms which made the necessity for immediate removal of the growth, were awakened by the attempt to remove a part of it with a snare; but there can be little doubt this would have in time been rendered necessary by the accumulation of pus or other secretions behind it. It is also worthy of remark that it was so easily detached from its attachment, by simple traction with a pair of forceps, which certainly could not have been done if the tumor had been a true extosis. Of course this kind of a tumor is not to be confounded with those which occur on the inner portion of the osseous meatus, which are often bilateral, of the consistence of ivory, have no pedicle, are immovable, of a conical form, and bear no relation to any other affection of the ear. Such a case I have described elsewhere (*New York Medical Journal*, March 9, 1889), in which I successfully removed the growth by the use of

the electro-osteotome, an instrument devised by the late Dr. J. Milton Josiah Roberts, of New York, as a motor power for drilling out or removing these growths.

## ABSTRACTS FROM CURRENT OTOLOGIC RHINO- LOGIC AND LARYNGOLOGIC LITERATURE.

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### I.—EAR.

#### **A Case of Influenza Followed by Mastoid Abscess, Sinus Thrombosis, Meningitis and Death, Autopsy.**

ALLPORT, Chicago. (*Archives of Otology*, Vol. XXVIII, Nos. 5 and 6.) Patient was a man, aged 76, who, two years before, had fallen from a loft, lighting on his head. On recovering from the effects of the fall, his memory was bad. During an attack of influenza there developed left middle ear suppuration with pain and swelling over the mastoid. Six months later, the patient came under the observation of the author, and he found tenderness of the left mastoid on pressure, Mt. intact and a fistula in the lower part of the posterior wall of the auditory canal, from which fetid pus escaped. On opening the mastoid the cells and antrum were found full of pus and granulation tissue. For two weeks subsequent to the operation nothing of note occurred; then patient became restless and irrational. Temperature varied from 97° F to 99.6° F. Pulse 76 to 82. A diagnosis of acute meningitis was made. The skull was trephined over the temporo-sphenoidal lobe and dura were found inflamed.

On autopsy a few drops of pus were found at trephine opening. The dura was completely adherent to skull by old adhesions. Dura and pia deeply congested and a small pyriform thrombosis found in the left lateral sinus.

*Campbell.*

#### **Multiple Tubercular Tumors of the Skull and of Both Tympanic Membranes.**

FREYSING, Rostock. (*Archives of Otology*, Vol. XXVIII, Nos. 5 and 6.) A man, aged 19, of good family history, four months before admission noticed on his right leg a hard, rounded, painless tumor about 1/2 inch in diameter. Painless swellings later appeared behind the right ear and on the left side of the forehead. There was some suppu-

ration in each ear. His general condition was good and there was no fever. There was a small swelling near the inner canthus and a large fluctuating, tense swelling between the left temple and the frontal eminence. Another tumor behind the right mastoid the size of half a hen's egg appeared to be adherent to the sterno-mastoid. The left Mt. was changed into a bright red granulating mass and in the lower part was a perforation.

The right Mt. is cloudy and in its posterior third were two circumscribed grayish-yellow swellings which ran over upon the wall of the canal. The hearing in the right ear was much better than in the left.

The tumor masses were removed and showed interiors lined with dirty granulation tissue, which on microscopic examination proved to be tubercular.

The author then proceeds to give a resumé of tubercular tumor growths on other parts of the body. *Campbell.*

#### Otitis Media In Early Childhood.

BARTH, Leipzig. (*Archives of Otology*, Vol. XXVIII, Nos. 5 and 6.) Of 600 sick infants ill with various affections, 80 per cent. were found to have a lesion of the middle ear.

Autopsies have shown that the Mt. usually remains intact in most of the cases of inflamed middle ear in infancy. In early childhood, the more remote parts of the ear are not involved during acute middle ear inflammation as they are in the adult life. The author would hesitate to open the mastoid cells in the child if the only symptoms were swelling and redness of the upper and posterior portion of the alimentary canal. The middle ear may be inflamed and contain pus, yet the Mt. showed no alteration, other than a bulging at some point.

In the treatment of otorrhea in young children the author uses irrigations and has the patient come to him every day. This insures proper cleanliness and he is enabled to treat complications early.

In order to keep the opening in the Mt. free so long as acute symptoms are present, after cocainizing the edges of the perforation with a 10 to 20 per cent. solution and subsequently drying the parts, he places a crystal of chromic acid directly into the opening. When the acid has

acted sufficiently long it is removed with a cotton probe. This leaves a smooth round opening which heals readily after the flow of pus has ceased. *Campbell.*

**A Case of Epidemic Cerebro-Spinal Meningitis with Bilateral Otitis; Trephining of Both Mastoids and Exposure of the Transverse Sinus; Recovery.**

STEIN. Moscow. (*Archives of Otolaryngology*, Vol. XXVIII, Nos. 5 and 6.) A child, aged 6, has been suffering from whooping cough for four months, when, with the onset of epistaxis and fever, there developed delirium, double-sided otorrhea constipation, enlarged spleen, dilated pupils, convulsions of both upper and lower extremities, general hyperesthesia and incontinence of urine. Temperature varied from 101° F to 102.5° F, pulse from 110 to 130. The ophthalmoscope revealed anemia of the fundus of both eyes and edema of the optic papilla. There was marked rigidity of the muscles of the neck.

The temperature fell to 99.4° F and on account of the obscurity of the symptoms it was decided to open the mastoids. Upon exposing the antra and transverse sinuses, stringy muco-pus but nothing more was found. During the next two weeks there was but little change in the child's condition, then there was a gradual return of the various senses.

Microscopic examination of the discharge at various times revealed the presence of the diplococcus intracellularis of Weichselbaum. The probability of this being a case of epidemic cerebro-spinal meningitis is enhanced by the fact that during the sickness a brother, aged 4, was attacked and died after four days illness, with typical symptoms of meningitis. *Campbell.*

**On the Thyroid Treatment of Chronic Deafness.**

BRUCK, Berlin. (*Archives of Otolaryngology*, Vol. XXVIII, Nos. 5 and 6.) The author after reviewing the favorable reports of Vulpius, Brüche and Alt, gives his experience of the thyroid treatment in forty cases, carefully selected, and all being between 18 and 48 years of age. The author has yet to see a single case of positive improvement in hearing and concludes, that the treatment by thyroid extract of chronic deafness, no matter how it originated, is useless in every case, in which all other methods have equally failed.

*Campbell.*

**Tinnitus Aurium.**

PANSE, Dresden. (*Archives of Otology*, Vol. XXVIII, Nos. 5 and 6.) The author after very carefully reviewing the literature in regard to the causation of noises in the ears comes to the following conclusions:

1. Almost all sounds should be designated by their pitch.

2. The pure conduction-sounds arise from the diminished outlet of sound, due to rigidity of the conducting apparatus. Inasmuch as the motility of the latter is required for hearing only low notes, the fixation is an obstacle to the outlet of these notes alone. Pure conduction-sounds are mainly placed between 16 and 256 vibrations.

3. The higher pitched sounds are due to processes in the inner ear. This statement is sustained by their occurrence in normal persons after such influences as are known to injure the inner ear and also by the effect that therapy has on them. They may be produced (a) by reflex from the external meatus, middle ear, and many different parts of the body.; (b) by changes in the inner ear or the nerve itself. In rare cases, however, low sounds may, perhaps also, originate in the inner ear.

4. Hearing of complex sounds like melodies, etc., is not *prima facie* proof of a cerebral affection.

In respect to treatment, never perform any grave operations upon the conducting apparatus when the sounds heard are high pitched, and especially removal of the stapes should not be attempted. *Campbell.*

**The Contagiousness of Acute Otitis Media.**

LERMOYEZ. (*Presse Medicale*, Aug. 12, 1899.) The contagiousness of acute otitis media is shown by numerous clinical observations made by the author, who urges the importance of isolating patients suffering from this affection. *Goodale.*

**The Importance of an Ophthalmic Examination in Purulent Affections of the Ear.**

DELSTANCHE, FILS. (*Gaz. hebdom de med. et de chir.*, Sept. 14, 1899.) From an examination of contemporaneous otologic literature, the author finds that in 122 cases of endocranial involvement in middle ear inflammation,

the ophthalmoscopic examination of the fundus gave a positive result in 54 per cent. of the cases. These results are close to those of Gradenigo (52.3 per cent.) and those of Jansen (53 per cent.). In a personal examination of 15 cases of severe middle ear and mastoid inflammation unassociated with endocranial involvement, the ophthalmoscopic examination was negative. The author concludes that optic neuritis or choked disc, if present in such cases, almost always point to endocranial complications.

*Goodale.*

**On the Motor Innervation of the Velum Palati with Reference to a Case of Right Hemiplegia of the Velum and of the Larynx In a Child, Following Radical Operation for Tubercular Otorrhea of the Left Side.**

BRINDEL. (*Journ. de medecine de Bordeaux*, Aug. 6, 1899.) A child, on whom an opening of the left middle ear and mastoid for tubercular disease had been performed, was suddenly taken twelve days later with a complete paralysis of the right half of the velum palati and of the right half of the larynx. The facial muscles were normal. Fifteen days later a paralysis of the external rectus of the right eye came on. The child showed a tubercular infiltration of the left apex and of the tracheal and bronchial lymph glands. The author is inclined to the supposition that a tubercular nodule opened in the floor of the fourth ventricle compressing the spinal vagus, thus producing the paralysis of the palate and larynx and that later another nodule appeared at the level of the external motor oculi. In this manner a confirmation would be obtained of the view of Lermoyez that the velum palati is not innervated by the facial nerve but by the spinal vagus.

In the discussion it was pointed out by several speakers that isolated paralysis from intracranial tubercular nodules are extremely rare. In this case the possibility is not excluded of peripheral causes of pressure along the vagus trunk.

*Goodale.*

**Multiple Rupture of the Membrana Tympani.**

OVERACKER, KATE. (*Laryngoscope*, July, 1899.) The membrana tympani was ruptured in three distinct places as a result of injury.



The conditions promptly yielded to treatment,, the perforations closing on the tenth day. All the symptoms that accompanied the affection disappeared and hearing was greatly restored.

About eight months afterward the patient developed severe cerebral symptoms (giddiness, vomiting, etc.). The drum was again reopened and extensive cicatricial adhesions between the drum and inner wall of the tympanic cavity were removed. There has been no return of the unfavorable symptoms since. *Seymour Oppenheimer.*

**A Case of Temporal Abscess Drained Through the Attic after Ossiculectomy and Curettement.**

STILLSON, HAMILTON. (*Laryngoscope*, July, 1899.) A case of cerebral abscess in the region of temporal lobe was drained through the attic. After the removal of the entire membrana tympani, necrosed malleus and incus, the vault was explored with a probe. A narrow ragged opening was found in the tegmen which was subsequently removed. After careful curettement a free flow of pus took place. The cavity was drained and patient made a good recovery. *Seymour Oppenheimer.*

**Mastoiditis. The Importance of Early Surgical Treatment.**

MCCAW, JAMES FRANCIS. (*N. Y. Medical Journal*, December 30, 1899.) McCaw's article contains nothing new, but the importance of the proper recognition and early interference in these conditions is so paramount that it cannot be emphasized too strongly.

The danger is not in operating, but in waiting until the disease is beyond our control.

The conclusions of the author are:

1. In threatened mastoid involvement and in mild acute cases the conservative plan of treatment should be employed for a week or ten days, unless dangerous symptoms arise.

2. Operative interference should be instituted in acute cases where there is sagging of the postero-superior canal wall, where the infection is of a virulent type and in all cases complicating chronic otorrheas.

*Seymour Oppenheimer.*

**Uncommon Pyogenic Infection of the Middle Ear.**

SATTLER, ROBERT,, Cincinnati. (*Journal American*

*Med. Association*, February 10, 1899.) The infection followed the removal of a posterior hypertrophy of the right side of the nose (by what method is not told) in a woman of frail physique, but good health and with no history of previous ear trouble. The operation was followed by general septic infection, involvement of the right ear, the antrum and the mastoid cells down to the dura, with perforation of the tegmen and a large extradural abscess. After operation and complete drainage recovery followed. *Richards.*

**Otitis Media in All Grave Diseases of Infancy.**

POMEROY, E. H., M. D., Calumet, Mich. (*Boston Med. and Surg. Journal*, January 18, 1899.) Dr. Pomeroy thinks otitis media in infancy much more common than has been supposed. He quotes in detail the statistics of Ponfick, who made 100 autopsies on children and found only 9 normal ears; death having occurred from various diseases. Ten cases only having been diagnosed as otitis media alone, or with acute bronchitis. The manner of infection and the resulting pathologic processes are briefly considered. The infection usually takes place via the eustachian tube; once infected, this tube readily closes and the middle ear becomes changed into a good incubator for bacterial growth and a generator of bacterial toxins. The author cites five cases of his own which illustrates the importance of considering the ear in all grave infantile affections. Case 1, five months bottle fed baby, convulsions, death. After death ears examined; left drum tense, clear fluid on puncture, right drum pus. Author believes child might have been saved had puncture of the drum been made earlier. Case 2, nine weeks old baby, continual crying, ears examined by five physicians including the author, without discovering any abnormality; puncture followed by liberation of three or four drops of pus, immediate relief and prompt recovery. Case 3, child seven weeks old, continuous vomiting for three days, temperature 105, no ear tenderness apparent, puncture of drum; one drop of pus liberated, temperature next day 98, prompt recovery. Case 4, child eighteen months, bronchopneumonia with diarrhea, no ear symptoms; puncture made because physical signs not exten-

sive enough to account for condition, pus from each ear, immediate relief. Case 5, child five weeks, profuse watery diarrhea, two or three drops of pus after puncture of right tympanum, immediate relief.

Before operating the ear should be thoroughly cleansed with sublimate solution and ether or chloroform anesthesia used in order that the examination and operation may be complete and satisfactory. A better appreciation of cases such as these where the ear is not apparently the principal organ at fault will save many lives. *Richards,*

**The Operative Treatment of Mastoid Inflammation.**

DENCH, E. B., New York. (*Laryngoscope*, October, 1899.) Examination of the statistics of the larger hospitals in New York City devoted to the special treatment of diseases of the ear showed that ten years ago the mastoid operation was rarely performed. During the last few years it has been performed almost daily. Another important fact was while in former years the treatment of intracranial complications of suppurative middle-ear inflammation was relegated entirely to the general surgeon, at the present day these operations were performed by the otologist. Regarding the indications for opening the mastoid process in chronic suppurative otitis media, it is the writer's opinion that the indications for the operation laid down by Schwartze many years ago were those followed at the present day. The only difference was that under improved surgical technique, by which perfect asepsis was secured, the surgeon did not hesitate to act on these indications immediately. For this reason the number of operations was relatively greater than in former years. The indications for operative treatment in this condition are: (1) Local tenderness over the region of the antrum, and (2) a sagging of the upper and posterior wall of the external auditory meatus close to the membrana tympani. When these signs exist operative interference is always indicated. Experience has shown that the temperature of the patient furnishes but little indication. Spontaneous pain might also be absent although the mastoid might have undergone extensive destruction. Many surgeons regard "tip tenderness" as an important diagnostic point. In the writer's experience

it has proven of but little value. Owing to the increased frequency with which the mastoid operation is performed it might be as well to consider any possible dangers which might arise in the operation itself. His own statistics show that out of 228 operations upon the mastoid process in no case could death be attributed to the operation. Where intracranial complications existed, operative treatment offered the only means of relief. In 13 cases in which thrombosis of the lateral sinus was present, death followed in but two cases. One patient died of acute nephritis, which was probably caused by ether narcosis. Of 14 cases operated on where there was an epidural abscess all recovered.

Regarding the radical operation for the relief of a chronic otitis media with involvement of the mastoid (the Stacke-Schwartz operation), 17 cases have been operated on. Of these 12 were cured and 5 improved. It can therefore be easily seen that the mastoid operation is not in itself a dangerous procedure if the rules of aseptic surgery are closely followed. No operation of this character should be performed without the strictest antiseptic precautions both as regarded the field of operation and the instruments, also the surgeon's hand. If proper care was taken, the exposure of the meninges, either in the middle or posterior cranial fossa, or exposure of the opening of the lateral sinus, did not increase in any degree the mortality of the operation. On the other hand the more extensive and radical the operation, the better the result. The surgeon who operated most frequently and most radically was really more conservative than he who waited for very pronounced symptoms. Regarding the technique, all details of preparation of the operative field should here be undertaken with strict surgical cleanliness. The primary incision should lie close to the line of auricular attachment and should extend from just below the tip of the mastoid to just above the external auditory meatus, the soft parts being divided down to the bone. In this manner a very narrow anterior flap was formed. The anterior flap was pushed forward by means of a periosteum elevator, exposing thoroughly the superior and posterior margins of the bony external auditory canal. All bleed-

ing points were secured by means of artery clamps. The next step was to sever the attachment of the sterno-mastoid muscle. This was best done by means of blunt scissors curved on the flat. The tendinous attachment of the muscle should be divided until the finger can be passed beneath the tip of the mastoid into the digastric fossa. In every case the mastoid antrum should be first entered. This applied not only to those cases in which perforation of the cortex was present near the region of the antrum, but also where spontaneous perforation had taken place into the digastric fossa through the internal plate of the mastoid. For removing the mastoid cortex he preferred either the chisel or the gouge. The bone should first be removed as close to the posterior wall of the bony meatus as possible and not above the spinum supra meatum. The opening in the bone should be gradually deepened until a probe can be passed through the mastoid antrum into the middle ear. The wound should then be explored by means of a probe to ascertain whether the bony walls are intact. After the mastoid antrum has once been entered, the topography of the process is evident. The entire mastoid cortex should then be removed by means of the chisel or gouge and the tip removed by the bone forceps. Great care should be taken to thoroughly curette the aditus and antrum so as to permit free drainage of the middle ear through the posterior opening. Experience has taught that the operator was inclined to do a less radical operation than was absolutely necessary. In later cases he has found not infrequently that the bone seemed almost normal. Close inspection, however, revealed the fact that it was a little congested and slightly dark in color. With reference to any possible accidents that might occur during the operation, these are of trifling importance provided aseptic treatment was carried out. One should never operate upon a case without expecting to expose or open the lateral sinus or to enter the cranial cavity. The exposure of the sinus in doubtful cases is imperative, and if its appearance is not perfectly normal, a free incision should be made into the vessel. No harm could possibly result from this procedure, and many a life which would otherwise be lost might be saved by what was apparently a radical and uncalled for procedure.

**The Petro-Squamosal Sinus—Anatomy and Pathologic Importance.**

CHEATLE, A. H., London. (*Laryngoscope*, October, 1899.) As little or nothing is written in even the best works concerning this sinus, which has most important connections with the middle ear both from anatomical and pathological standpoints, the writer has thought the subject of sufficient interest to bring before the Congress. The following British authors have written upon the subject: J. F. Knott, of Dublin (*Journal of Anatomy*, Vol. xvi, page 27), who quotes C. Krause, Luschka, Otto and Sir Charles Bell, Henry Morris (*Anatomy*, page 661), Professor MacEwen ("Pyogenic diseases of the Brain and Spinal Cord," pages 2 and 8), and Quain (*Anatomy*).

## COMPARATIVE ANATOMY-

In some lower animals, dog and calf for instance, this sinus runs across the roof of the middle ear making its exit by means of a large foramen between the base of the zygoma and the bony meatal wall, and serves almost entirely for the exit of the intracranial blood, taking the place in fact of the sigmoid portion of the lateral sinus.

In higher forms of monkeys, such as the chimpanzee, gorilla and ourang outang, the sinus closely resembles the human.

In the *Macacus* group the young often have the groove which runs along the petro-squamosal suture, and the anterior external opening well marked; while with the adult the opening is usually closed or rudimentary, leaving the groove which runs forward to the foramen spinosum. In other varieties, notably in Baboons, *Chrysothrix*, *Cebus*, *Midos*, *Habule*, *Lemuridæ* and *Indri*, both the groove and the external opening are well marked, the latter piercing the bone between the large post-glenoid tubercle and the bony meatus. In these the sinus does not take the place of the sigmoid portion of the lateral sinus as it is also present and well marked.

## HUMAN ANATOMY.

In early fetal life, before the formation of the internal jugular vein, the petro-squamosal sinus carries all the intracranial venous blood emerging in front to open into the primitive jugular (afterwards the internal jugular). It

is not to be wondered then that this channel which serves such important duties in early fetal life should persist in some form or another in later life. The anterior opening usually closes, the sinus or its remains at its anterior extremity forming a connection with the middle meningeal vein. The sinus dwindles to a small size, while the opening into the lateral sinus often persists.

With regard to the persistence of the anterior opening in front of the meatus in adult life, the writer examined 2,585 skulls in the Royal College of Surgeons' Museum, and among this number found in 23 rudimentary remains, 3 in the glenoid cavity, 3 in the zygomatic process itself, 6 in the base of the zygoma, and 11 just external to the Glaser-ean fissure, with sometimes a fine groove running outwards and occasionally bridged over by the junction of the postglenoid tubercle with the bony meatus. It is the rule rather than the exception for remains of the sinus to be present in some form or another all through life. A statement supported by Mr. Arthur Keith and Mr. Cadman.

In infancy and childhood the sinus as a rule had a well-marked opening into the lateral sinus behind by means of a valve-like opening and in front joining the middle meningeal vein, while in adult life, although it is often marked, careful search has sometimes to be made. The absence of markings on the bone in the neighborhood of the suture does not by any means show that the sinus is not present. In infancy and early childhood, in the region of the posterior extremity of the suture, numerous irregularities are often seen; it is at this spot that a bridge often forms over the posterior end of the sinus before it opens into the lateral sinus, a common condition in the adult bone.

On looking at the roof of the middle ear in a fresh specimen after the dura mater has been stripped off, a network of rather large veins can be plainly seen immediately beneath the bone; from this network several veins emerge through the suture to empty into the sinus.

In children in which the interval between the suture is wide these are sometimes numerous, especially posteriorly. In the adult a fairly constant one is present on a vertical level with the membrane; or more may be present at inter-

vals. These emerging veins receive a fine covering representing the meninges.

Occasionally the openings of fairly large veins can be seen on the cerebral side of the sinus, especially at its anterior part.

#### PATHOLOGIC IMPORTANCE,

It is therefore seen that there is a connection between the veins of the middle ear and those of the meninges and occasionally, at all events, with those of the temporo-sphenoidal lobe, and through the meningeal coverings the middle ear is in communication with those of the middle and posterior fossæ. Under these circumstances the importance of this sinus with its tributaries and connections, from a pathological point of view, is very evident and explains how infection may spread from the middle ear to meninges and brain without microscopical evidence of the connection. Such a state of things is not uncommon, as we all know, in infants and children, in whom the pathway we are considering is well marked and in whom the membrane may be intact. There is a specimen of mine in the museum, obtained from the post-mortem room from an infant, aged one year, who died of suppurative leptomeningitis, without a known cause, during an attack of pneumonia. The middle ear was full of pus containing all sorts of pathologic cocci. Cut sections of the emerging vein failed to show cocci, but this by no means precludes this as having been the pathway. There was no thrombosis. It is astonishing, in the face of this close connection of the middle ear with the meninges, that meningitis is not of more frequent occurrence. The explanation may be that the meninges, like the peritoneum, are able to deal with a certain amount of infection, and only when the dose is excessive, that this resisting power is overcome. This pathway will also explain the presence of a cerebral abscess without microscopic connection with the diseased middle ear. The sinus may be the pathway for septic thrombosis of the lateral sinus.

A. H. Cleveland, of Philadelphia, in the *Archives of Otology*, Vol. xxiv, p. 136, 1895, relates the case of a boy, aged 6 years, who died of pyemia. At the post-mortem the petro-squamous sinus was found abnormally large and



deep, being at one or two points almost entirely bridged over by bony processes. At its anterior extremity necrosis had taken place and pus had entered the sinus, causing a thrombus which extended backwards into the lateral sinus. Meningitis was present on the same side.

In St. George's Hospital Museum is a specimen of the dura mater with the lateral and longitudinal sinuses, from a man, who, after suffering with discharge of the right ear for three months, died with symptoms of meningitis. At the post-mortem examination suppurative meningitis was found over the right side with septic thrombosis of the lateral and longitudinal sinuses. A vein was found which made a direct communication between the tympanum and the lateral sinus and which would admit the passage of an eye probe.

It may be that we have here one of the pathways which will solve some of the unaccountable intracranial affections met with by the physician, such as the posterior basic meningitis of infants, cerebro-spinal meningitis and perhaps some cases of tuberculous meningitis.

It is taken from a section of the lining membrane of the middle ear of an infant who died of tuberculosis meningitis and general tuberculosis. Tubercle bacilli can also be seen in another section.

#### **Extension Massage of the Ossicles with a New Aural Masseur.**

STILLSON, HAMILTON, Seattle. (*Journal American Med. Association*, January 20, 1900.) An electric masseur differing from many forms of aural massage apparatus in use in that vibrations of the membrane and ossicles can be attained while they are already in a state of tension. This is brought about by means of a rubber bulb connected with the nozzle inserted in the meatus. "The instrument first puts the offending sclerosed tissues on the stretch and then more or less rapidly jerks them loose, so to speak." The tension can be made inward if desired. Many old sclerosed cases have improved under this treatment.

Richards.

#### **Therapy of the Tympanic Mucous Membrane.**

GOLDSTEIN, St. Louis. (*Laryngoscope*, December, 1899.)

The author advocates conservatism in the treatment of chronic middle-ear affections. Mastoid and intra-tym-

panic operations are frequently undertaken where patience and care in the application of less radical measures are available.

An interesting bacteriologic point was discussed in that micro-organisms can be harbored within the confines of the middle-ear cavity for so long a time without giving rise to a further extension of the inflammatory process. Suppurations of the middle ear are frequently found which have existed for years without much indication of tissue destruction, or disturbances to the patient. Micro-organisms find an especially favorable habitat on mucous membrane, and this suitable culture medium, supplemented by the moist serous surface and fairly uniform temperature of the tympanic cavity afford the best possible opportunity for the rapid spread from an infected focus. Over 70 per cent of suppurative affections of the tympanic cavity are due to an extension and infection from the naso-pharynx to the Eustachian tube. Through this portion of the mucous tract and extension to the tympanic cavity is rapid; conversely, in chronic suppurative infections of the middle ear an extension to the attic, antrum and mastoid is slow. It will be interesting to determine the reason for this decided difference of the same micro-organism to spread; on the one hand the rapid spread through the naso-pharynx via Eustachian tube to the tympanic cavity; on the other the slow progress from the tympanic cavity via attic and antrum to the mastoid cells.

Preference is given to the "dry treatment" in suppurative otitis media, and the promiscuous use of the syringe decried. Numerous reasons and opinions are advanced in setting forth the disadvantages of the frequent use of the syringe and lavage, and the author concludes with the claim that this form of treatment is contraindicated in active suppurative cases where large perforations of the membrana tympani exist, and where free entrance of the syringing fluid into the tympanic cavity is so easily effected. The statement is offered that many of the cases requiring mastoid interference or ossi-culectomy have been unconsciously produced by the too liberal use of the syringe in cleansing the tympanic cavity.

The indiscriminate use of the nasal douche, especially when handled by the patient himself, is commented upon and subsequent infections of the tympanic cavity as the result of this procedure is pointed out.

The Eustachian catheter is liberally used in connection with a nebulizing or vaporizing apparatus in chronic suppurative otitis media to accomplish the three-fold purpose of inflating the middle-ear cavity, of clearing the tympanum of pus and of medicating the middle-ear cavity from within.

Inflation of the middle-ear cavity is accomplished by a steady current of air, continued five minutes at a time, in conjunction with a nebulizing apparatus and Eustachian catheter. Long standing cases of suppurative otitis media have yielded to this treatment where all other methods have failed.

Where the discharge is profuse, the above method of treatment is supplemented by a gauze packing, selecting narrow strips of plain sterilized gauze for this purpose.

Medicated liquid petroleums are extolled in the treatment of chronic non-suppurative catarrh of the hypertrophic form and have even been found of therapeutic advantage in mild sclerotic otitis media.

A special feature of this paper is the intra-tympanic injections of medicated liquid petroleums. Applications to the tympanic cavity are made as follows: A short hard rubber Eustachian catheter is introduced in the usual manner and snugly fitted into the naso-pharyngeal orifice of the Eustachian tube, the tight fit being necessary to avoid leakage at the tip of the catheter when the fluid is forced into the tympanic cavity. A glass-barrel syringe, two inches in length and one-half inch in diameter, supplied with a cone-shaped tip is tightly applied to the distal end of the catheter. The syringe is loaded with a solution containing iodine, 3 grains, carbolic acid, 4 grains, benzoinol or albolene, 1 ounce. When the catheter and syringe are properly adjusted, the patient's head is tilted well backward and inclined toward the ear to be medicated. The piston is pressed home slowly, and in the majority of cases, after six or eight drops have been delivered, the patient will state that he feels an unusual

fullness in the ear. The syringe is then adjusted to the cone-shaped tip of the compressed air apparatus; a few short taps, and then a steady pressure continued for eight or ten seconds is given. This insures the penetration of the tympanic cavity by the fluid.

The above technique is applied either alone or in conjunction with some form of pneumatic massage of the membrana tympani.

**Naso-Pharyngeal Adenoids as a Causative Factor in Ear Diseases.**

HAIGHT, ALLEN T., Chicago. (*Journal American Med. Association*, December 23, 1899.) From his experience in hospital and private practice he regards naso-pharyngeal adenoids as the main factor in producing both suppurative and non-suppurative inflammatory conditions of the tympanic and Eustachian mucous membranes. They produce inflammation of the middle ear by constant irritation from pressure and by blocking more or less completely the orifices of the Eustachian tube, by their injurious effect on the general economy of the child, particularly the nerves of special sense and by leaving a post-nasal catarrh as a sequel which sooner or later establishes some form of middle ear disease. The sufferers from this trouble are shallow breathers and their blood is not sufficiently oxygenated. This excess of carbonic acid in the blood causes the lassitude, headache, stupidity and general dullness of sense so frequently found where adenoids are present. In an examination of 26 deaf mutes made by the author only 4 were free from postnasal adenoids. Many feeble minded children suffer from adenoids and the author thinks there are many children in institutions over the world who could possibly be restored to usefulness by the removal of the adenoid growth. The statistics of many showing the proportion of ear troubles, acute and chronic, due to the adenoids is given. As is well known, the percentage is a large one.

Operation should be done as soon as the condition is recognized and by any satisfactory curette of the cutting type, but not by the chemical or thermo-cautery. Under twelve years of age the author prefers anesthesia with bromide of ethyl; after that age local anesthesia.

*Richards.*

**A New Treatment For Chronic Catarrhal Inflammation of the Pharynx Connected with Diseases of the Ear.**

GRAZZI, V., Florence. (*Journal of Laryngology*.) After referring to the frequency of chronic catarrhal pharyngitis and the inefficiency of all the methods hitherto proposed for its treatment, the author discussed the varieties and different degrees of the affection. He exhibited some microscopic preparations in order to show the normal structure of the pharynx, and the alterations produced in it by chronic catarrh with hypertrophy of the adenoid tissue. The structure of the pharynx itself suggested to him the method of treatment under consideration—a method which consists in the compression or crushing of the diseased tissues. Consequent on these manœuvres, repeated more or less frequently, the tissues become less inflamed, the granulations are reabsorbed, the function of the glandular tissue is re-established, as well as the circulation in the bloodvessels and lymphatics.

Professor Grazzi carries out this treatment by means of small metal probes bent at a more or less obtuse angle, the small probes ending in a kind of fork into which are fixed small rollers. These are pressed up and down on the pharynx with more or less force, according to certain indications mentioned by Dr. Grazzi, and have been found very useful in certain cases where the disease had spread to the middle ear.

**Diagnosis and Treatment of Middle Ear Diseases.**

FARBER, J. H., Dayton. (*Journal American Medical Association*, December 23, 1899.) The author makes the statement that “chronic hypertrophic rhinitis and more or less stenosis from spurs or deflected septum have nothing whatever to do with causing any form of aural trouble,” and attempts to prove this by the fact that: “All specialists meet with stenosis, spurs, hypertrophy of turbinates extending into the posterior nares, and large soft pharyngeal tonsils in which there is absolutely no involvement of the ear, consequently if they were causative factors, these obstructions could not exist except when complicated with aural troubles, while many cases of acute and chronic aural troubles are seen in which there

are neither obstruction, hypertrophy of turbinates, nor enlarged or soft pharyngeal tonsils." (The reviewer does not regard the argument as a sound or a convincing one. It is also opposed to the practical experience of the majority of rhinologists and otologists.) Curiously enough the author says "while not admitting cause—except in adenoids—I always try to correct these nose and throat defects."

He regards tinnitus as always due to more or less ankylosis of the joints of the ossicles with each other and of the stapes to the oval window. He punctures or removes the drum and says the noise stops in nearly every case. If it does not stop it is because there is firm ankylosis or retraction of the drum and the hole does not admit the waves against the inner wall and the drum and ossicles still receive the vibrations.

*Richards.*

**The Diagnosis of Anterior Abscesses of the Mastoid, and of Furunculosis of the External Auditory Meatus.**

BARR, LOUIS, Nice. (*Journal of Laryngology.*) Otolologists are agreed that they sometimes find it difficult, if not impossible, to make a diagnosis between abscess of the limiting cells of the mastoid process and furunculosis of the meatus externus. In such cases a reasonable diagnosis can only be made from deductions drawn from a perfect acquaintance with the anatomy and physiology of the region, and at the same time from the general aspect and progress of the case. The following deductions may be drawn:

1. That early lymphangitis and periauricular adenitis are the rule in all furuncular affections of the meatus, and are late and exceptional in purulent inflammations of the limiting cells. This is consequent on the difference between the lymphatic systems of the external and middle ear.

2. That perimastoid edema effaces the retro-auricular depression in furunculosis, whereas in mastoiditis the retro-auricular depression persists and remains circumscribed.

3. That the pharyngeal plexus may become visible through venous stasis induced by the mastoiditis.

4. That, in consequence of the different innervation of

the tympanum and the meatus, spontaneous pains and sensitiveness are more acute in furunculosis; they are less marked in general in anterior abscess of the mastoid.

5. That also, for neurologic reasons, in inflammation of the anterior cells facial paresis is sometimes observed, as also an exaggeration of the sense of taste, and a peculiar sensitiveness of the pharynx and end of the tongue.

6. That the bacterial nature of the pus is different in the two diseases.

7. That, in the absence of any febrile condition, a continuous disproportion between the pulse and the temperature is in favor of the mastoiditis.

#### **Exostosis of the Right Auditory Meatus.**

RUTTEN, Namur. (*Journal of Laryngology.*) The osseous anomaly was remarkable for its larger size. It measured 15 millimetres in length, and 12 millimetres in thickness. It filled the external meatus so completely as to prevent the introduction of the very smallest probe between the cell and the tumor. Besides, by its compressure, the excrescence had destroyed the skin and caused an osteo-periostitis of the canal. This secondary suppuration, complicated by the retention of pus in the middle ear with the commencement of cerebral symptoms, compelled the patient to let himself be operated upon.

The exostosis is remarkable, in addition to its extraordinary size, for the long time it had been in the ear without causing any trouble. Its slow development had taken place unperceived. The patient was thirty-eight years of age at the date of the operation; he was a cooper by occupation, had served in the army, and had never suffered from running from the ear. Seven years before the operation he had consulted Dr. Rutten for deafness. At that moment the exostosis already completely obstructed the meatus, and the patient was much astonished when he touched with his little finger a hard body which was only distant a few millimetres from the entrance to the ear. He had never suspected its presence. At that date the operation proposed was declined, although the dangers of suppuration were pointed out, complications which, as a matter of fact, set in seven years later. One might

therefore safely say that the tumor had been fifteen to twenty years in developing.

The exostosis, of the consistence of ivory, was pedunculated. It was covered with a thin transparent skin, and was implanted on the postero-superior wall, occupying the whole bony part of the canal. Under an anesthetic it was removed with the gouge, without turning down the auricle. The result of the operation was immediate restoration of hearing and cure of the otorrhea.

**Effects of the Exanthematous Diseases on the Ear.**

BELLOWS, H. P. (*New England Medical Gazette*, February, 1900.) Scarlet fever, measles and small pox are considered, while roseola, r  theln and varicella are not thought to have any specific effect on the ear. The scrofulous and tuberculous type is more liable to aural complications and the intensity of the process is usually in direct ratio to that of the disease causing it. The channels of infection are by extension via the skin and via the Eustachian tube and through the general blood channels; the latter rare. The middle ear is usually affected and the inflammation is a suppurative one; the process may be rapid and virulent with destruction of the drumhead and involvement of the neighboring bony structures. The resulting destruction is so great and the damage so apt to be permanent, especially after scarlet fever and to a lesser degree after measles, that an attempt should be made in all cases to prevent and lessen the aural complications. Throughout the course of these diseases the possibility of ear involvement must be constantly in mind and a prompt and free incision of the drumhead made at the first sign of trouble. The subsequent drainage of the ear is to be provided for and it is an important part of the treatment.

*Richards.*

**Twentieth-Century Prognosis in Chronic Catarrhal Deafness.**

SNOW, SARGENT, Syracuse, N. Y. (*Journal of Laryngology*.) The unfavorable but time-honored prognosis given chronic catarrhal deafness has made it a subject rather shunned by modern writers, but the importance and frequency of the problem impelled him to place before the Sixth International Otological Congress a few of more hopeful conclusions born of his personal experience.



For many years this affection has baffled the skill of foremost otologists, each apparent success being overcome by the progressive nature of the disease, until gradually it has taken a place in the list of non-preventable and incurable maladies; even now it does not seem safe to assume that those almost totally deaf can be improved, but otologists must admit that recent advances have changed our prognosis in other conditions. Why not in that great body of chronic catarrhal cases where, for instance, words in a forced whisper can still be heard 10 inches or better?

Anatomic and physiologic study has shown the intimate relation of the nasal and aural membranes both by continuity and sympathy; what benefits one is in the right line to benefit the other, whether we have to deal with a hypertrophy or a sclerosis. The reason we still have so many failures is that either we have overlooked some point of obstruction or contact in the upper portion of the nose that is acting as an irritant, or we should go further, and advise our patients to submit from year to year, if necessary, to hygienic care and a tonic treatment with stimulating vapors to the tube and middle ear.

Of late we have been led to expect too much from purely nasal operative work, when with 80 per cent. of such cases recurring catarrhal inflammations yet remain as an important causative factor. In early adult subjects, where the deafness is of only one or two years' standing, it is true that the removal of turbinate pressures, ethmoidal disease, or adenoids may be followed by good results without special attention being made to the middle ear. But with those cases giving a history of five, ten, or twenty years' impairment of hearing, we are sure to find that the inflammatory action within the ear and Eustachian tubes will continue if we do not also institute a thorough and persistent course of after-treatment.

Chronic catarrhal deafness is a preventable disease. In every one of these patients we will find, besides their nasal trouble, some functional disorder or an habitual and gross transgression of Nature's laws. Unseasonable clothing, improper diet, poor portal circulation, warm baths, exposure to drafts night or day, and too little arm exercise

are among those most prominent, and it is against these our great fight has to be made. He says "great fight," for here our judgment and skill are most taxed; these errors must be corrected, their surface reaction improved by cold baths, and each habit scrutinized, for when membranes have once been in a state of chronic congestion, dietary and other excesses or the taking of a slight cold will produce a profound impression on the already weakened bloodvessels.

A few patients afflicted with chronic otitis media give no history of nasal trouble, but we will invariably find the post-nasal or Eustachian membranes in some stage of inflammation or atrophy, frequently pale and relaxed, but very sensitive. This class needs little operative work, but the parts require stimulation. Their life must be looked into, and so regulated that they are better able to resist colds and throw off congestions; even those showing sclerotic states are capable of some improvement.

Assuming that our patients are sensible and intelligent people, it is just and expedient that we go quite into detail in explaining Nature's method of repair, and the different steps of treatment. No further encouragement or promise is necessary if we make the points clear. An ignorant, unreasonable patient is not a favorable one, for he fails to appreciate the obstacles to be overcome, and the great need of regular and careful attention. I believe that our best policy is to be honest. Surrounded as these people are by bad climatic influences, and tempted by the good things of life to an unhealthful indulgence, we do wrong to encourage them in thinking that they will have no relapses; but we can assure them that their relapses will be much more tractable and easily subdued if their membranes have once been relieved of abnormal conditions.

To get favorable results in chronic catarrhal deafness, it is absolutely necessary that we, first, do most thorough nasal work; second, study habits and environment, correcting all that tend to induce recurring congestions of the membrane; and third, give persistent treatment to the middle ear and watch the general health.

When all removable causes have been taken care of and the parts healed, a vapor of camphor and iodine by inter-

rupted jets applied through the Eustachian catheter serves well the treble purpose of strengthening relaxed or atrophied membranes, increasing ossicular mobility, and absorbing inflammatory products. These treatments should be gauged according to the individual case in hand. Some every day, some twice a week, but each with the most particular care, using the auscultation-tube to make sure that the vapor reaches the tympanic cavity until the relaxed bloodvessels are toned up, and we cease to get more improvement in the hearing.

A rest from active treatment can then be permitted, but the patient should be instructed to report again as soon as an increase in deafness is noted. These periods of rest may become longer and longer until three to six months are allowed.

An interesting feature is that, many times after these periods of rest, we can press the improvement further than at our previous attempts seemed possible, and to a point where the disease is surely under control or good hearing established. Protracted effort with the stimulating vapor is a great aid in this last portion of the treatment, and we find that Nature's power to regenerate membrane and function is truly wonderful if tonic applications are steadily made.

Chronic catarrhal deafness in itself is not so formidable a disease, but the fact that the patient is adding to it so many days in each year is why we are baffled.

We must not expect too much improvement in hearing during, or soon after, the nasal operative stage, for there may still remain very sensitive nasal and tubal membranes, dependent often on some disorder of the general system that requires careful attention before we can get vapors well into the middle ear; but if we keep courage and follow the above plan we will find that 80 per cent. of those that have been given an unfavorable prognosis, because they failed to improve from a six or eight weeks' course of sprays and inflation, can be taken up and very satisfactory results obtained.

**Sarcoma of the External Auditory Canal.**

CONNAL, GALBRAITH, Glasgow. (*Journal of Laryngology.*)  
Malignant tumors of the ear are rarely met with. Of the

two forms of malignant disease, sarcoma of the ear is more uncommon than carcinoma. On looking over the statistics of the Glasgow Ear Hospital for the past twelve years, I find that in an aggregate of nearly 15,000 cases malignant disease is noted as occurring six times, once in 2,500 cases, four times epithelioma, and twice sarcoma. These figures nearly agree with those of Bürkner, which are often quoted. More recently Asch, in 1896, in reporting a case of sarcoma of the auricle, mentioned that he had found only ten cases of sarcoma of the ear described in literature.

Of the two cases of sarcoma which have occurred at the Glasgow Ear Hospital, one was reported by Dr. Barr in the *British Medical Journal* for October, 1897; the second is the case submitted.

These two cases were in marked contrast in the way they developed. In Dr. Barr's case, where the sarcomatous mass originated in the middle ear, there was no external growth, and the symptoms latterly pointed to some intracranial mischief suggesting temporo-sphenoidal abscess. In the present case, where the sarcoma originated in the external auditory canal, the development of the tumor was outwards, and gave rise to a large swelling in front of and behind the ear.

The patient was a girl six years of age. About eight weeks before she came to the hospital, her mother noticed a small growth—said to be quite painless—in the external auditory canal. A portion of this growth was removed by the family medical attendant, but it quickly recurred, and afterwards pain was persistent and severe. Facial paralysis set in seven days later and persisted. There was no history of purulent discharge from the ear.

Inspection showed a grayish-looking mass occupying the external meatus. It was exceedingly painful to the touch, and with the probe it was found adherent along the posterior wall of the canal. There was slight matting of the tissues in front of the ear over the parotid, and the gland at the angle of the jaw was enlarged. As already mentioned, there was marked facial paralysis on the same side.

Under chloroform the whole mass was curetted from the

wall of the canal. The tympanic membrane was found destroyed, and the bone on the inner wall of the tympanum denuded of periosteum. This gave relief from pain, she slept well, and put on flesh. But in about a month's time the growth recurred, and rapidly involved the mastoid region and the tissues in front of the ear. The great involvement of these regions by the extension of the tumor outwards was seen from the photographs.

The patient died seven months after her first visit to the hospital. No post-mortem examination was allowed.

Sections of the tumor showed a spindle-celled sarcoma, with the sarcomatous growth extending along underneath the epidermis.

These malignant tumors of the ear, though rare, are very interesting. A point of practical importance lies in the diagnosis. As we know, sarcoma is apt to manifest itself in the earlier years of life, at a time when we often meet with polypi and granulations in the external auditory canal as the result of neglected purulent otitis media. Excessive pain should always excite suspicion of malignant mischief, and lead to a microscopic examination of the tissue. So far as he has examined the literature on the subject, excessive pain is the prominent system. If in addition to pain there is marked and rapid recurrence of the growth, with glandular involvement, we have a group of symptoms which should make one careful as to the diagnosis and prognosis.

In the present case the excessive pain, and—what was very marked—the grayish look of the tumor, which was unlike ordinary granulations, the intimate adherence of the tumor to the posterior wall of the external auditory canal, the matting of the tissues in front of the ear, the glandular involvement and the facial paralysis—these, apart altogether from the history of the case, presented a clinical picture which at once arrested attention, and led to a microscopical examination of the tissue being made, when the diagnosis of sarcoma was confirmed.

#### **Epilepsy of Aural Origin.**

LANNOIS, Lyons. (*Journal of Laryngology.*) The writer gave the history of a patient, aged twenty-six, of tuberculous inheritance, but without any pulmonary

symptoms, who was attacked with double otorrhea at the age of seven, and epilepsy at the age of thirteen. When he presented himself for treatment in April, 1897, he had, as a rule, an epileptic attack every week. One ear had cicatrized, and had been dry for some time. The other ear was still suppurating, the drum entirely destroyed, cicatrizing in part but with two ulcerations below and in front. Cure was obtained in a few weeks, and the hearing for the watch, which had been only on contact, improved to 25 centimetres. At the same time the epileptic attacks disappeared, and in March, 1899, the patient returned of his own accord to say that he had remained cured ever since, and that his ears were quite dry. During the year 1898 he had only had two slight attacks of vertigo, the last being in the month of August.

Cases like this, where the action between the otic lesion and epilepsy appear well marked, are very rare. It is this fact which gives the interest to the case, and shows the importance of treating the ears when they are affected in epileptics.

... **A Case of Cerebral Abscess Consequent on Acute Suppurative Otitis Media.**

MOURE, E. J., Bordeaux. (*Journal of Laryngology.*) When the patient presented himself for examination he complained of very acute pain, which had set in on the seventh day of his disease. In addition he had vertigo and depression, but no vomiting, and no interference with speech; the mind was clear, and the temperature was normal. On the other hand, he had right homonymous hemianopsia, and word-blindness with aphasia and verbal amnesia. These symptoms were confirmed by Professor Pitres, who made the diagnosis of cerebral abscess in the neighborhood of the curved convolution.

In presence of these distinct cerebral complications, Dr. Moure operated on January 4, 1899. The bone was congested, the mastoid process being full of fungous granulations right up to the tympanum. A free communication between the antrum and the tympanum having been made, it was seen that the roof of the antrum was necrosed, and that a small hard sequestrum separated the cavity from the brain. This sequestrum was removed, no pus escaped,

and the meninges appeared healthy. As the diagnosis indicated an abscess of the brain situated in the region of the cuneus, an opening was made in the upper part of the temporal bone at about  $3\frac{1}{2}$  centimetres above the auditory canal. The opening into the skull measured about 3 centimetres in diameter. A crucial incision was made through the dura mater and the pia mater, producing slight hemorrhage, which was easily arrested by compression. A fine bistoury was thrust about 3 centimetres backwards and a little upwards into the cerebral substance, but this puncture was immediately followed by a considerable spurt of blood, as if the sinus had been widely opened. Compression with gauze was maintained for some time while the antrum and tympanic cavity were being dressed. When this was finished the cerebral compress was removed, but the hemorrhage recurred so abundantly that it was impossible to continue the operation. A plug of gauze was therefore placed at the opening into the brain, and the hemorrhage was easily arrested in this way.

Next day the general condition was good, the patient talked freely, but had paraphasia, and the general sensibility was almost abolished on the side opposite to the lesion. The right arm was also somewhat paretic.

A few days later the patient was again anesthetized, the plug was removed, and it was then easy to see that the pulsation of the brain was normal. The skin was joined in order to avoid cerebral hernia, and a piece of gauze was left in the brain.

On January 10 the sensitiveness had returned, the general condition was good, and there was no fever. Dr. Moure was obliged to be absent for some days, and the patient was dressed regularly until January 15, when the dressing was found saturated with pus which had run even on to the shoulder of the patient; in fact, the cerebral abscess had emptied itself by the orifice made through the brain. The hemianopsia had disappeared. A rubber drainage tube was placed in the cavity. Improvement went on until January 24, when the patient complained of the dressing hurting his head, and on removing it a cerebral hernia was found of the size of a small Tangerine

orange. On January 26 the patient became comatose, and died suddenly in the evening.

At the post-mortem it was easy to see that there was an abscess which had opened externally, and which opened into the ventricle, causing the patient's death. The abscess, in fact, was found at the level of the curved convolution, but it was not surrounded by a limiting membrane, so that the flow of pus was followed each time by a certain quantity of cerebral material, and hence the ulcerative process which had unfortunately caused the death of the patient.

The case is interesting because of the considerable hemorrhage which followed the puncture of the brain, and which was probably the result of opening a very congested vein—a vein which probably accompanied a deep cerebral sulcus. It is also interesting because of the slight symptoms of reaction which followed this abundant hemorrhage and the consequent plugging. Finally, the case proves once again that abscesses of the brain are always serious when they have no limiting membrane, and that when in doubt it is preferable not to make any injections.

**A Case of Panotitis: Cerebral Complications: Death: Post-Mortem.**

DELIE, Ypres. (*Journal of Laryngology.*) A patient, aged forty, presented all the symptoms of chronic inveterate neuralgia of the right trigeminal. Deafness declared itself, and was found to be due to an exostosis of the right external auditory canal. An operation restored his hearing, but produced no change in the right hemicrania. A few days later symptoms of acute mastoiditis declared themselves, accompanied by vertigo, and a hardly perceptible otorrhea. A Stacke's operation showed the only lesions to be purulent infiltration of the external wall of the apophysis, and a small polypus in the attic. The patient died comatose a few days afterwards.

At the post-mortem examination the following lesions were discovered:

A purulent infiltration in the bony roof of the right middle ear.

Acute meningitic lesions limited to the anterior surface of the bulb, spreading from the side of the affected ear to the inner third of the cerebellum, and compressing on the



left side all the meninges which covered the left side of the cerebellum. There was pus in the fourth ventricle and in the left lateral ventricle. The left ear was free from any pathologic lesion, and the same could be said for all the other parts of the endocranium and its coverings, as well as for the skull.

**Acoustic Exercises for Deaf Mutes.**

A. COSTINIU, Bucharest. (*Laryngoscope*, January, 1900.) For these exercises the voice is used and also a variety of instruments (trumpet, drum etc.) The limit of the hearing distance for these is from 20 to 30 meters. The method employed is similar to that described by Urbantschitsch. The speaking voice is used in varying intensities. Hearing tubes are seldom employed as they are found to change the quality and character of the transmitted voice.

These exercises are undertaken by different members of the family to obtain the advantage of a variation in the voice for the patient.

In beginning these exercises the patients are drilled on one or two vowels per sitting; these sittings are repeated two or three times a day each of fifteen minutes duration. When the patient gives evidence of hearing the vowel clearly and can repeat it distinctly, other vowel sounds are added; then follow consonants, monosyllables and finally words and phrases. During these exercises the instructor sits at the side of the patient so as to accustom his hearing without looking at the speaker. When the patient has become familiar with lip-reading, the exercises are conducted so that the lips and mouth of the instructor cannot be seen.

When the patient is familiar with several vowel sounds before these exercises are undertaken a confusion in the interpretation of these sounds frequently occurs. To overcome this the individual vowel sounds which are badly heard are persistently repeated until the hearing becomes more distinct.

It occasionally happens that a patient who has progressed even to the point of hearing words and sentences may suddenly in the course of twenty-four hours have a sudden relapse. Under these conditions it is necessary

to begin again with the individual vowel sounds and progress as before.

Women take more interest in these exercises than men.

Certain nervous phenomena are occasionally observed and these gradually disappear as the exercises are continued. All of his patients were cases of acquired deafness and careful testing indicates some degree of hearing of the spoken voice. Where these traces of hearing do not exist the results of this acoustic training are much less satisfactory than in patients who still possess some remnant of voice hearing.

Together with these exercises catheterization of the Eustachian tube and Politization is also undertaken.

At the result of the work, ten patients can hear the spoken voice at more than one meter and the instruments at more than forty-five meters and they are able to hear and repeat entire phrases. Great observation is necessary both on the part of the instructor and of the patient and at a period of time varying from ten months to two years and even more, before satisfactory results can be obtained. Even then it remains to be seen whether these results are permanent.

**Intra-Tympanic Injections of Pilocarpin in the Treatment of the Middle-Ear Sclerosis.**

FISCHERICH, Wiesbaden. (*Laryngoscope*, January, 1900.) The author reports satisfactory results following the injection of pilocarpin into the tympanic cavity in 120 selected cases of well marked middle-ear sclerosis treated during the past four years.

The method, in brief, is the following: A 2 per cent aqueous solution of pilocarpin hydrochlorate is injected into the tympanic cavity by means of a flexible tympanic catheter passed through a metallic Eustachian catheter well up into the tube. He begins with 6 to 8 drops, gradually increasing to 10, 12, 14, 16 drops; the increase in quantity of the injecting fluid depends on: (1) The stage of sclerosis; (2) the absorption capacity of the tympanic mucous membrane; (3) the reaction, as evidenced by each individual patient.

Thirty to forty daily injections constitutes this course of treatment. In long-standing chronic cases; forty to fifty injections may be made.

The results in many cases have been surprisingly good, even after all other therapeutic measures have failed. The average improvement noted was a 2 to 10 fold increase of the hearing capacity prior to instituting this treatment.

The author observes the following data in the application of this method:

1. Hearing tests should not be made immediately following the course of injections, but after an interim of eight days, when all fluid and moisture in the tympanic cavity has been absorbed.

2. A further improvement in hearing is frequently demonstrable some time after the injections have been discontinued.

3. The improvement following a first course of injections is not always of a definite character, as a later course of such treatment frequently results in further improvement.

**On the Extraction of the Stapes, with Demonstrations of Histologic Preparations.**

POLITZER, Vienna. (*Laryngoscope*, December, 1899.) The simple mobilization of the stapes had only a temporary effect on the hearing. Where the improvement was more lasting it was due to a tearing of the adhesions. Better results were obtained by dividing the adhesions formed between the branches of the stapes and the walls of the niche of the fenestra ovalis. The operation of the extraction of the stapes was founded on an experiment with animals. It had been found that in birds and rabbits, after the extraction of the stapes, a new membrane was formed, closing again the fenestra ovalis. His own experiments on rabbits confirmed this fact, and, in addition, he found by microscopic examination that no pathologic changes were produced in the labyrinth. The operative extraction of the stapes in cases of the so-called sclerosis of the middle ear was, according to his experience, of no use, because his investigations had shown that the cause of the fixation of the stapes was a proliferation of bony tissue of the labyrinth, which even after removal of the stapes eventually closed up the fenestra ovalis.

The results of the extraction of the stapes in cases of

non-suppurative middle-ear catarrh with formation of adhesions were still too few for us to form a definite opinion of its value. In cases of chronic middle ear sup-puration a good number of observations had been made. The histologic examination of microscopic sections showed the following: On sections which passed through the nitch of the fenestra ovalis and vestibulum one saw the inner wall of the tympanic cavity covered by a granulated mucous membrane composed of round cells. This same granulation mass filled the nitch of the fenestra ovalis, and, passing forward from there through the labyrinth window into the vestibulum, filled out the whole cisterna persymphatica. This granulative tissue was firmly fixed with the utriculus and surrounded it on all sides. The wall of the utricle itself showed inflammatory thickening. In the horizontal semi-circular canal the connective tissue network was in a state of inflammatory infiltration invaded by round cells and intersected by dilated vessels.

More conspicuous changes were found in the cochlea. Here the inflammatory proliferations had entered both cochlea turns, reaching as far as the top, principally, however, in the scala tympana. It started mostly from the inversive of the cochlear canal and from the lamina spiralis and showed the same structure as the connective tissue proliferation in the vestibulum. Where the stapes had been removed either intentionally or accidentally during the performance of the radical operation, even when the immediate results had been favorable, still little was known about the ultimate results.

Tarse was of the opinion that the extraction of the stapes might be performed without danger to the hearing. But against the number of cases where the hearing was improved must be placed a series of cases in which it was destroyed. Prof. Politzer then cited a case which had come under his observations. This case, the first in which the labyrinth was histologically examined after the extraction of the stapes, was very important in securing the indication for the operative removal of the stapes. During the course of suppurative otitis media it showed the possibility of a spreading of the inflammation into the labyrinth, and might possibly be given as the explanation why the hear-

ing was impaired after the extraction of the stapes. He for one, therefore, was against the performing of this operation during the course of chronic suppuration of the middle ear. But when the suppuration had passed, and there were adhesions between the branches of the stapes and the niche of the fenestra ovalis, there was, he thought, a distinct future for the operative extraction of the stapes with view to improving the hearing. This opinion was based upon observations made by others and also upon a case which he has under his notice.

**Pneumo-Massage Under High Pressure.**

P. J. MINK, Zwolle. (*Laryngoscope*, January, 1900.) The chain of ossicles must be considered as a lever with the membrana tympani and the membrane of the oval window at its distal end. It is by this intermediary that the atmospheric air is placed in communication with the labyrinthine fluid.

The mobility of this intermediary, acting as a unit, exercises a predominant influence on the hearing. When the ossicular chain is stretched by the tension of the membrana tympani a considerable elasticity of this portion of the conducting apparatus is already produced.

From a physical standpoint the mobility of this mechanism possesses a value called the "Co-efficient of elasticity."

The decrease of mobility corresponds to an increase of this elasticity. The task imposed upon the aurist, where the transmitting apparatus is impaired, is to increase the mobility of the parts and thus decrease the "Co-efficient of elasticity."

To do this the general plan of massage has been that of an alternate rarefaction and compression, applied to the membrana tympani. This principle is a thoroughly rational one if we keep in mind that the massage movements must "exceed the limit of elasticity." It should be understood that this property of elasticity possessed by the drum membrane and ossicles must be overcome in order to obtain the greatest possible benefits from pneumo-massage.

Pneumo-massage as usually applied does not take this point into consideration, and from a mechanical standpoint, therefore, has heretofore not been applied to its

fullest possible extent. The favorable results following massage are due mainly to its influence on the impaired mechanism and the rigidity of the ossicles.

A force is necessary to first draw the chain of ossicles tense in order that the entire transmission apparatus may be brought within the influence of the massage. It is our purpose, therefore, to draw the drum membrane and ossicles to a constant tension by pneumatic pressure to the "limit of elasticity" and thus apply an alternate compression and rarefaction constituting the massage of these parts.

To determine the value of this technique, the author has observed the results in a series of cases where the pneumatic pressure has been raised in a slow and gradual manner as here described, with the following results:

1. Only a low pressure is tolerated by the normal ear without painful sensations.

2. Where the sound conducting apparatus is impaired, higher air pressure is comfortably borne.

3. The only exceptions to these rules are the various forms of acute inflammation, exceptional cases of attic suppuration, and atrophy of the mallus.

4. In cases of middle-ear sclerosis, constant and increased pressure is always tolerated to a greater degree than in the normal ear.

5. The close relation existing between the degree of sclerosis and the amount of pressure tolerated may frequently help to verify the diagnosis.

As the result of these observations it may be admitted that the painful sensations of this massage procedure may determine the "limit of elasticity" of the sound-conducting apparatus.

The treatment instituted is a simple and direct application of these principles.

A reservoir of air communicating with the ear by means of a rubber tube tightly fitted into the auditory canal, is compressed in a slow and gradual manner by the action of a screw. To one side of this apparatus a manometer is attached; the other side is supplied by a small pear-shaped rubber bulb.

The screw is turned, admitting an air current in the ear

until a painful sensation in the interior of the ear is produced.

Close attention must be paid to the application and the amount of pressure applied by this apparatus. Too strong pressure of the rubber bulb will be harmful, while on the other hand, if the pressure is too light it will not be effective. By paying strict attentions to the sensations experienced by the patient many harmful results may be avoided. A pronounced hyperemia of the membrana tympani is also observed, but this, however, is of little consequence. The time of application and the frequency of alternating compression and rarefaction of this apparatus depends upon the character of the case.

The results always obtained from this method have been very encouraging, and the subjective noises in the ear, and also the hearing of the patient have been materially improved.

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## II.—NOSE AND NASO-PHARYNX.

### **Scheisch Anesthesia in Operations for Deflections and Spurs of the Septum.**

BAUMGARTEN, E., Budapest, Hungary. (*Fränkel's Archiv. IX, 3, 359.*) The author first paints the mucous membrane with a ten per cent. solution of cocain in order to introduce the curved needle of the syringe without pain and hemorrhage. The solution he now employs consists of sodium chlorid, 0.6, distilled water, 100.0, and eucain, 0.2. It must be distributed gently beneath the mucous membrane, lifting it in all directions and making a whitish wheal. If the deviation or spur is somewhat large, a second injection is made above or behind the first. If the patient appears to be sensitive, the point of the needle is shoved deeper into the tissues. Even when the lumen of the nose is nearly occluded, the needle can be insinuated behind the obstruction. The operator then waits a few seconds, meanwhile tamponning the needle puncture, if necessary. He uses a chisel corresponding in breadth to the size of the spur and a hard-wood mallet, which is preferably handled by an assistant. The hemorrhage is very

slight. If the chiseling is done in the front part of the nose there is no pain; when further back on a very hard spur, some pain is felt. In the last fifty cases treated in this way, the author was not compelled to stop operating on account of the patient's pains, but could finish, although some patients were frightened and pale. The chisel is held at different angles until a plane surface is formed, requiring but a few seconds, as the field of operation can always be seen. When the chisel is finally applied no resistance is felt, and the removed tissue hangs down by the mucous membrane posteriorly. This is removed by the scissors, and the upper and lower margins trimmed. The immediate hemorrhage is remarkably slight, but the secondary bleeding will be profuse if the nose is not packed carefully. The tampon may not be removed for twenty-four hours. Another disadvantage is the feeling of faintness towards the end of the operation. The packing can be kept from slipping into the naso-pharynx and nose by filling the end of the gauze tampon with cotton, and making a cushion of it. It must be renewed daily in some cases for a week. Patients object to iodoform (twenty per cent.) gauze in the nose, but no material can take its place in the first days. Deviations of the anterior part of nose are the most difficult to treat on account of the danger of causing a perforation. In these operations the author still makes a flap. When the spur is adherent to the lower or middle turbinal, Schleich anesthesia is also sufficient. It requires less time by this method to perform tracheotomy than to put most patients under the influence of a general anesthetic. If any suturing is done above or below the canula, a small dressing must be applied to guard against secondary hemorrhage. The vomiting which occurs during cocain anesthesia is avoided by this method. The anterior end of the middle turbinal was removed in the same way in empyema of the frontal sinus. And the antrum of Highmore can be punctured or opened by drilling with hardly any pain

*Morgenthau.*

**On Tuberculosis of the Pharyngeal Tonsil.**

LEWIN, LEON, Russia. (*Fränkel's Archiv.* IX, 3, 377.) In Brieger's wards in Breslau (Germany), the author made careful examinations in 200 cases. In nine, tuber-



culosis was found histologically. In three of these tubercle bacilli were discovered. The proof, however, of tuberculosis was brought in the case without bacilli by the even more decided anatomical appearances. In addition to these nine results, one attempt at inoculation was successful; making ten "latent" instances of tuberculosis in 200 cases examined. The sum total of all observations published is 905 cases with 45 tuberculous findings, *i. e.*, "latent" tuberculosis in about 5 per cent. of all hyperplasias of the pharyngeal tonsil. Statistics are, however, misleading until a greater number have been investigated. The author's first 40 cases, for instance were negative; then positive results followed in quick succession, while the last 50 cases were again negative. His deductions from his interesting and painstaking investigations are as follows:

1. In about 5 per cent. of the cases of hyperplastic pharyngeal tonsil tuberculous foci were found.

2. The tuberculosis corresponds essentially with the so-called tumor form of the tuberculosis of the mucous membrane; it is characterized by the absence of all externally recognized signs — "latent" tuberculosis of the tonsil.

3. This "latent" tuberculosis may, probably, be the first and only localization of tuberculosis in the body.

4. It is, however, usually combined with tuberculosis in other parts, especially in the lungs, even if this is not manifest at the time of operation.

5. It is found relatively frequently in pulmonary tuberculosis.

6. It may attack pharyngeal tonsils of normal size as well as hyperplastic ones. It is doubtful if the tuberculosis, possibly as the result of toxin, induces hyperplasia. It certainly can, however, retard the physiological involution of the tonsil.

7. It is of relative subordinate importance in the etiology of hyperplasia of pharyngeal tonsil.

8. It may be definitely eliminated by removal of the pharyngeal tonsil even if tuberculosis of the lungs is present at the same time.

*Morgenthau.*

**Fibrous Tumor of the Naso-Pharynx.**

INGALS, E. FLETCHER. (*New York Medical Journal*, Dec. 16, 1899.) An interesting case, which the author had under his observation for many years, showing a tendency to atrophy of a large fibrous growth of the nose and naso-pharynx, as the patient advanced in life.

*Seymour Oppenheimer.*

**The Relation of Pathologic Conditions in the Ethmoidal Region and Asthma.**

RICE, CLARENCE C. (*New York Medical Journal*, Nov. 11, 1899.) In the opinion of the writer asthma bears little relation to ethmoidal disease unless polypi are present, and mouth breathing with the resultant general catarrhal state causes the asthmatic seizure by vaso motor disturbances.

MacDonald is quoted to the effect that neither condition is dependent upon the other, but that both are the simultaneous expression of an inflammatory process, resulting in the polypus in the upper and the bronchial catarrh and spasm in the lower respiratory tract.

*Seymour Oppenheimer.*

**The Relation of Pathologic Conditions in the Ethmoid Region of the Nose and Asthma—Treatment.**

BOSWORTH, F. H. (*New York Medical Journal*, Nov. 18, 1899.) The author lays great stress on the appreciation of the connection between the respiratory function of the nose and the bronchial mucous membrane. The improper functioning of the one tends to the development of a pathological disturbance of the other. Reference is made to the intimate association of edematous hypertrophy, polypoid degeneration and nasal polypi with asthma. These affections are claimed to be manifestations of ethmoiditis. The removal of polypi cures the hay fever, yet fails to affect the asthma, unless more radical treatment is employed, such as the removal of the ethmoidal cells.

A large hollow middle turbinate projecting into the cavity of the nose pressing upon the septum, and distended ethmoidal cells crowding the middle turbinate upon the septum are the clinical evidences of ethmoiditis.

Occlusion of the orifices of these cavities results in polypoid degeneration of the mucous membrane and intracellular pressure, which in turn brings about, more par-

ticularly in individuals of a neurotic temperament, symptoms (sneezing, asthma, etc.), which may be designated as pressure signs.

For the relief of this condition, the burr driven by an engine, is preferred to the snare, as by this instrument the trabecular walls can better be broken down.

Polypi springing from the posterior ethmoidal cells in the superior meatus are uncommon as compared with the number originating from the anterior cells in the middle meatus.

The ordinary case of asthma associated with nasal polypi is regarded as curable, provided the ethmoid cells are thoroughly treated.

*Seymour Oppenheimer.*

**A Nasal Polypus Weighing an Ounce and Three Inches and a Quarter Long, Springing From the Septum Nasi of a Child of Twelve.**

COSTON, H. R. (*New York Medical Journal*, Aug. 5, 1899.) Examination of the pharynx revealed a growth protruding half an inch below the soft palate completely filling the nares anteriorly. At the time of the operation digital exploration showed the large tumor to be attached posteriorly to the septum within the right nasal cavity by a pedicle almost half an inch in diameter. To this same pedicle was also attached three other polypi an inch and a half long. The smaller ones were evidently lobulated portions of the main growth. Considerable external deformity was present. Under cocain anesthesia, the tumor was removed via the pharynx by manual evulsion, tearing it forcibly from its attachments. Little hemorrhage followed.

The author reviews the literature of nasal myxoma.

*Seymour Oppenheimer.*

**Hemorrhage Following Adenoid Operations.**

MARTIN, W. A. (*Laryngoscope*, July, 1899.) Three cases of profuse hemorrhage following adenectomy are reported by Martin. The hemorrhage was so severe that plugging of the posterior nares had to be resorted to.

*Seymour Oppenheimer.*

**The Relation of Pathologic Conditions in the Ethmoidal Region and Asthma.**

INGALS, E. FLETCHER. (*New York Medical Journal*, Nov. 11, 1899.) A brief report of several interesting cases

coming under the author's observation showing the different manner in which asthmatic paroxysms have been brought about. For example, the effect of odors and dust in different cases. Also the effect of mental fright.

*Seymour Oppenheimer.*

**Concerning Adenoid Vegetations in the Adult, Etc.**

JANKELEVITCH, Bourges, (*Revue Hebdom de Laryngologie*, 1899, No. 30.) Jankelevitch emphasizes the frequency with which one finds hypertrophy of the pharyngeal tonsil in the adult.

He points out the difference in symptomatology between children and adults suffering from this affection, and believes that in the adult reflex phenomena, for the most part of a neurasthenic type, are common.

Some of the symptoms complained of are stubborn cough with expectoration; constant irritation of the throat; affections of taste and smell. Some believe themselves to have a bronchial and pulmonary affection, are sleepy by day and sleepless at night. The pharyngeal tonsil like the other is subject to inflammations which are sometimes accompanied by symptoms which may easily confuse the physician unless he is watchful.

Cases of basilar meningitis and septicemia have been observed consecutive to abscess of the pharyngeal tonsil and acute inflammations are not at all uncommon.

The author reports a case exhibiting several features of interest. The patient had for a year suffered from a persistent cough, with occasional bloody expectoration and hoarseness. He was at the time of examination aphonic. His lungs were unaffected, and Jankelevitch discovered that the hoarseness came from crusts of dried mucus which covered the larynx, and the bleeding from a greatly developed and very friable mass of adenoid vegetation. Operation stopped the bleeding and the crust formation was much lessened.

*Hardie.*

**Epistaxis.**

COBB, F. C., Boston. (*Boston Medical and Surgical Journal*, January 4, 1900). Most commonly from anterior portion of the septum. Causes: slight ulcerations from deformities, deviations and the use of the finger nail to remove offending particles of dried mucus, fractures and

dislocations from injuries as boxing and others, new growths as angiomas and angio-sarcomata which may cause very severe hemorrhage. Constitutional conditions play an important part as plethora, anemia, syphilis, phthisis, alcohol. The author has seen severe nose bleed associated with nephritis, the disease affecting the walls of the arteries. A case is reported where severe hemorrhage from a small point on the septum, arterial in character requiring plugging was due to nephritis and was the first sign of the disease; death from nephritis followed two years afterward. A second case had blood from the posterior nares, with no sign in nose or throat to account for it. One and one-half years afterward he was dying of nephritis; hence the author argues for the careful examination of the urine in cases of severe and persistent nose bleed. When blood appears in the mouth the question as to its point of origin is a very important one and one not easily settled. A careful examination and the presence of a bleeding point in the upper air tract are necessary to eliminate the question of its deeper origin. A sharp deviation in one nostril may serve to direct the blood backward toward the pharynx and bloody scabs and crusts in the naso-pharynx are fairly good evidence of the nasal origin of the blood. The usual remedies are mentioned, much stress being laid on the necessity of a thorough and fairly satisfactory examination, which on account of the presence of blood and clots it is often difficult to get. Pledgets of cotton soaked in 5 to 10 per cent. cocain and followed by others soaked in solution of suprarenal capsule serve to stanch the bleeding and render the examination satisfactory. Chromic acid or the galvanocautery at a red heat is applied to the bleeding point. Objection is made to plugging the posterior nares with a sponge and the anterior with a half-inch or so of cotton or gauze and letting the intervening space fill with clot. Instead, the plugging should be with a single strip of narrow gauze carried in with long forceps and successive strips laid along the nose as far back as the posterior nares and from the floor of the nose up. These are allowed to remain from 24 to 48 hours and are removed with great gentleness. *Richards.*

**Case of Echinococcus Cyst of the Nose.**

RODGERS, W. K., Columbus, Ohio. (*Journal American Medical Association*, February 3, 1900.) In 1895 a fibrous polypi was removed from the naso-pharynx. It was attached to the septum. At the same time a mucous polypi was removed from the interior of the left nostril. Two years and eight months afterward a soft mass was removed from the site of the former mucous polyp in the nose. It was the size of an almond and contained echinococcus hooklets. Two years later there had been no recurrence. The patient was a woman 34 years old, in good health, and there was no evidence of the presence of interstitial parasites. *Richards.*

**Intranasal Angioma: Bleeding Polypus of the Septum.**

CASSELBERRY, W. E., Chicago. (*Journal American Med. Association*, February 3, 1900.) The author adds another case to the somewhat scanty literature of this condition and believes that the condition is more frequently met with than the cases recorded would lead one to suppose. The tumor, the size of a small bean, was attached by a rather broad pedicle to a small septal excrescence at the point of junction of the cartilaginous segment with the septal process of the superior maxilla. It was removed with the cautery snare and the base cauterized with chromic acid. After two years there had been no recurrence. The tumor was found to consist largely of blood vessels and blood spaces. *Richards.*

**A Case of Carcinoma of the Nasal Passages.**

GOODALE, J. L., Boston. (*Journal American Medical Association*, February 3, 1899.) Male, age 51, had had for 33 years, nasal polypi removed from the left nasal passage by various physicians, and of late occasionally on the left side also. Otherwise health had been good. Six months before examination a pale, red mass was found among a cluster of small polypi. The mass was the size of an almond, springing from the region of the infundibulum, of firm consistence and adherent in places both to the septum and the external nasal wall. Microscopic examination proved it to be carcinoma. Although masses were frequently removed progress was rapid and death resulted. No radical operation was deemed advisable.

From time of determining malignancy till death, a period of fifteen months elapsed. The author does not state whether he regards this as a primary carcinoma or the transformation of a benign into a malignant growth as is said to sometimes occur. *Richards.*

**Observations on the Asch Operation for Deviation of the Cartilaginous Septum.**

THORNER, Max., Cincinnati. (*Journal American Med. Association*, January, 6. 1900.) This article by the late Dr. Thorner describes with minute detail the Asch operation in all its steps and is a most valuable contribution to the literature of the subject. Dr. Thorner regards this operation as applicable to all cases of cartilaginous deviations of the septum, all of his cases but one having been entirely satisfactory in their results. Its success depends upon the carrying out of all the details and especially in completely breaking up the resiliency of the septal segments at the time of operation. *Richards.*

**Some Phases of Intranasal Surgery.**

WOOLEN, G. V., Indianapolis. (*Journal American Med. Association*, December 30, 1899.) A review of the physiology of the nose and the conditions for which intranasal surgery is justified and demanded. The author believes the chief operative measures in the nares should be for one ore more of the following purposes: 1. To restore nasal respiration and relieve disease of the respiratory tract. 2. To aid the drainage of the nose and its accessory cavities. 3. To remove pressure irritation. 4. To remove local hyperesthetic tissues. 5. To render local medication possible and successful. 6. To remedy auditory diseases. 7. To remedy voice difficulties. 8. To remove malignant disease. The decision in each case must rest upon the needs of the individual patient, since not every spur needs removing nor all hypertrophied turbinates cauterizing. *Richards.*

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III.—MOUTH AND PHARYNX.

**The Treatment of Follicular and Suppurative Amygdalitis and the Angina of Scarlet Fever by the Injection of a Solution of Carbolic Acid.**

LIPES, H. JUDSON, (*New York Medical Journal*, Oct. 21, 1899.) In nineteen cases, comprising six of diphtheria,

five of scarlet fever, three of suppurative and four of simple and three of follicular amygdalitis, injections of a solution of carbolic acid varying in strength from one to four per cent. was employed. The injections were followed by no symptoms of carbolic acid intoxication nor sloughing of tonsillar tissue.

The local manifestations of the acute infectious fevers were considerably ameliorated by this method of treatment.

In the opinion of the writer many cases of acute tonsillitis can be aborted by the use of these injections.

*Seymour Oppenheimer.*

**Purpura of the Buccal Mucous Membrane from the Injection of Iodin.**

WILIAN, (*Presse Méd.*, Sept. 30, 1899.) A woman, 43 years of age, after taking six grams of iodid of potassium daily for six days, was affected with ordinary symptoms of iodism and also with a burning sensation at the vault of the palate, the exudation of a pink fluid and an extensive ecchymosis on the mucous membrane. The symptoms disappeared with the omission of the medicine, and reappeared when it was again administered.

*Goodale.*

**Ulceration of the Pillars of the Velum in Typhoid Fever.**

SCHAEFER, (*Gaz. hebdom. de méd et de chir.* Sept. 3, 1899.) The anterior pillars are especially exposed to the action of the typhoid bacillus, either directly or through its toxins which tend to cause necrosis. This action is aided by compression from the tongue, by the dryness of the mouth, and by the relative immobility of the pillars. The progress of the ulceration is favored by the ordinary bacteria of the mouth.

*Goodale.*

**A Contribution to the Therapeutic Value of Gargling.**

TOTH, (*Pester Med. Chir. Presse No. 35.* 1899.) A soldier, in order to escape punishment for some offense, took a caustic fluid of undetermined nature into his mouth with the intention of swallowing it, but at the commencement of the act of deglutition spat the fluid out again. Examination showed corrosion of the soft palate, pillars, and uvula, while the tonsils and posterior pharyngeal wall remained unaffected. The author assumes that



the course of the fluid was similar to that occurring in the act of gargling. In a later number (No. 36), KRAMOLIN questions the correctness of this supposition and discusses the nature of the act of gargling and of swallowing. A final reply by TOTH appears in No. 40 of the same journal in which he reiterates his statement that gargling is nothing more than a washing out of the mouth, in which the tonsils take part only in so far as they contribute to the formation of the isthmus faucium, and that a fluid, in order to reach the pharynx, must be swallowed.

*Goodale.*

**An Epidemic of Streptococcus Angina, with Lesions of Herpetic Character in the Majority of Cases.**

LE DAMANY, (*Gaz. des Hopitaux*, Sept. 21, 1899.) The city of Rennes was visited during December, 1898, and the first six months of 1899, with an epidemic of acute angina, characterized by severe transitory, general symptoms, and by the eruption of herpetic vesicles upon the tonsils and soft palate, associated frequently with cutaneous herpes, generally of the lips. The epidemic nature was extremely marked. In schools and garrisons the number of individuals affected ranged from five to twenty per cent. One case terminated fatally in a general streptococcus septicemia. In two children, the only clinical symptoms were fever and cervical adenitis. Coryza, laryngitis and bronchitis were rarely found and, if present, always secondary. Disturbances of the nervous system were invariably absent. The bacillus of Pfeiffer was not found in any instance, but a streptococcus was always present, frequently in pure culture.

*Goodale.*

**Acute Suppurative Processes in the Faucial Tonsils.**

J. L. GOODALE. (*N. Y. Med. Journal* Oct. 7, 1899,) Goodale has made a study of eight cases of acute amygdalitis, characterized by the presence of intra-follicular abscesses, occurring as complications of the usual proliferative changes, with a hope that some light might be thrown upon—

1. The etiologic relationship of these intrafollicular abscesses to special micro-organism.

'2. Their relationship to peritonsillar inflammation.

3. Their prognostic significance and the possibility of recognizing their presence from chemical appearances.

The phenomena of the eight cases may be summarized thus:

1. In cases with numerous intrafollicular foci of suppuration, the streptococcus pyogenes were found to be more abundant than forms of staphylococci.

2. The intratonsillar abscesses were found in two cases, with, and in six cases without, circumtonsillar inflammation.

3. The cases presented clinically a severe infection, as shown by the fever, constitutional disturbance, joint pains and acute cervical lymphadenitis.

They unquestionably showed, as a whole, more disturbance than was present in twenty cases of simple proliferative amygdalitis observed by the writer.

4. The tonsils in most cases presented no clinical appearance that would enable one to determine the presence of the intrafollicular abscess. In a few cases subepithelial white spots were seen, which were conjectured to be abscesses situated immediately beneath the epithelium of the exposed surface.

5. Histologic phenomena:

1. The suppurative foci were few in some tonsils and numerous in others. They varied often in size in the same specimen, being in some follicles small and barely recognizable, in others occupying most of the interior of the follicle, while in still others the abscesses were seen to have already broken through the lymphoid ring and to have discharged their contents into the adjacent crypts.

2. The amount of fibrinous exudate in the crypts was more marked in these cases than generally exists in simple proliferative amygdalitis.

3. In the six cases not attended by circumtonsillar inflammation, the intrafollicular lymph channels and connective tissue spaces near the base of the tonsil contained few or no polynuclear neutrophils. On the other hand, in the two cases accompanied by peritonsillar inflammation, the connective tissue spaces and adjoining reticulum were crowded with polynuclear neutrophils, and in one of these cases these cells were seen to extend in direct continuity from an abscess situated in the interior of the tonsil toward the base of the organ.

The author says the number of cases thus far observed is too small to justify definite conclusions regarding their etiology or significance. Nevertheless, the following hypotheses suggest themselves as possessing a reasonable degree of probability.

1. The pyogenic infection of the follicles is probably secondary to a previous infection of the crypts by the streptococcus pyogenes. This assumption is based upon the results of the cultures, upon the different ages of the abscesses as observed in the same tonsil, and also upon the fact that a marked proliferative inflammation may exist for several days and the tonsil show on excision only a few incipient abscesses. If the follicular infection were of embolic origin, we should expect the abscesses to be more nearly alike in size and to antedate the proliferative inflammation.

2. In the two cases accompanied by circumtonsillar inflammation, this complication may have been due to the discharge observed of an abscess into the efferent lymph channel.

*Seymour Oppenheimer.*

#### **Recurrence of the Tonsil After Excision.**

F. E. HOPKINS, (*N. Y. Med. Journal*, Dec. 2, 1899.) The recurrence of the tonsil after operation in a case of the writer's led him to search the literature on the subject. The more recent treatises and current articles make less reference to the frequency or possibility of recurrence than the older works. The author assumes this to indicate that better and more skillful operative technique has resulted in a decrease in the return of this lymphoid mass.

Imperfect operation and constitutional dyscrasia tend to more frequent recurrence after operative measures have been employed.

*Seymour Oppenheimer.*

#### **Several Cases of Tonsillar Hypertrophy.**

LABBE and LEVI-SIRUGUE, (*Gazette Hebdomaire*, 1899, No. 92.) In a histological study of hypertrophied tonsils, the authors found an increase in the size of the follicles, with a marked development of the germinal centers, together with heightened karyokinesis. The epithelium of the surface and especially of the crypts showed marked signs of irritation. The connective tissue was conspicuous, but

there was no true sclerosis. Such tonsils differ from normal ones by a functional exaggeration. *Goodale.*

**Digestive Disorders in their Connection with the Rhino-Pharyngitis and Chronic Tonsillitis of Children.**

AVIRAGNET, (*Gazette Hebdomaire*, 1899, No. 94.) In four children affected by more or less marked digestive disturbances (fetid diarrhoea, gastro-enteritis, and membranous ulcerative enteritis,) examination showed the co-existence of rhino-pharyngitis and chronic tonsillitis. The digestive symptoms, after resisting all the ordinary methods of treatment, disappeared promptly upon the cure of the nasopharyngeal catarrh by appropriate measures. These facts would seem to show that in such cases, the digestive troubles were due to direct poisoning by the products of the nasopharyngeal secretions. *Goodale.*

**Diphtheroid Stomatitis of the Newborn.**

BRINDEAU, (*Gazette Hebdomaire*, 1899, No. 96.) This affection, otherwise variously known as Valleix's aphtha, Bednar's aphtha and Parrot's pterygoid plaques, consist in the presence of small ulcerations, at the level of the buccal mucous membrane covered with grayish white false membrane. Their usual seat is on the palate, at the level of the pterygoid apophyses, but they may be found in other situations, as in the median line of the palate, or the frenum of the lower lip. Their origin is still under discussion. In four cases, the author found the staphylococcus three times and the streptococcus once. In one infant, the affection was the starting point for a fatal erysipelas, in another child, where it continued to nurse, a secondary streptococcal infection of the lacteal ducts was produced in the mother. *Goodale.*

**A Case of Ludwig's Angina.**

MARCHESE DE LUNA, (*Gazette des hôpitaux*, 1899, No. 144.) A man, thirty-nine years of age, in good previous health, and of good habits was taken with a moderately firm, painful swelling of the right sub-maxillary region, immediately below a carious molar tooth. Two days later, swallowing became painful, movements of the tongue difficult and the breath fetid. Salivation and marked thirst were present. The tooth was extracted but the symptoms increased in intensity, the temperature reaching 39° and

the sublingual region so swollen as to prevent separation of the jaws. Four days later, the local conditions persisting, an incision was made in the subhyoid region evacuating fetid pus. After a period of relief, symptoms of general toxemia supervened with death in three days.

*Goodale.*

**Lesions of the Tonsils in Some Cases of Tuberculosis.**

LABBE and LEVI-SURUGUE, (*Gazette hebdomadaire*, 1899, No. 92.) Tuberculosis of the tonsils is more common than is generally supposed. It is more frequent in adults than in children, owing to the absence of expectoration in the latter. The tubercle bacillus is usually brought to the tonsils by the sputum in the course of pulmonary tuberculosis; less frequently by an ascending infection of the lymphatic glands of the neck, or by the blood vessels in the course of miliary tuberculosis.

All the forms of tubercular lesions may be found in the tonsils: ulceration, typical tubercular nodules with caseous or sclerotic changes, and diffuse infiltration. Bacilli are especially numerous in this last form.

The tonsils affected by the tubercular process may present more or less advanced cellular changes or a sclerosis, which is at times very marked. This last may be due to ordinary secondary infections, but it may also arise from the action of the tubercular toxin or represent the remains of a healed tubercular process.

*Goodale.*

**Fibro-Lipomatous Tumor of the Epiglottis and Pharynx.**

INGALS, E. FLETCHER, (*N. Y. Med. Journal*, Dec. 9, 1899.) A report of a case of a tumor of large dimensions attached to upper part of the right side of the epiglottis, to the right pharynx-epiglottic fold, to a part of the base of the tongue, to the right side of the pharynx. The growth was removed at different sittings under cocaine anesthesia by means of the cold snare and cutting forceps and supplemented by the use of the galvano-cautery.

Microscopical examination of the different portions showed in certain sections fibrous tissue, in others mixed fibro-lipomatous characteristics and in other parts true lipomatous tissue.

Examination some months later failed to show any evidence of recurrence.

*Seymour Oppenheimer.*

**A Report of Two Cases of Accessory Thyroid Gland at the Base of the Tongue.**

WATSON, ARTHUR W. (*New York Medical Journal*, Oct. 21, 1899.) *Case 1*: Woman, age 50, complaining of great dyspnea and difficulty in swallowing dating for a period of several years. Inspection showed a rounded tumor rising behind the arch of tongue, extending from the epiglottis to the circumvallate papillae. Surface of growth was slightly ulcerated.

*Case 2*: Girl, age 16, complained of difficulty in swallowing for five years past. Examination showed growth identical in position and appearance to that of Case No. 1, excepting that no ulceration was present. Both cases were operated under cocaine anesthesia by means of the electro-cautery snare. Microscopical examination revealed a meshwork of acini, dilated and cystic, and filled with a colloid material.

Lining the acini were bands of epithelial cells, considerably flattened by pressure. The stroma was made up chiefly of fibrous tissue, and numerous well-formed blood vessels traversing it throughout.

This condition of accessory thyroid enlargement is evidently quite rare, but little mention being made of it in the text books.

Tumors in this position are developed from a persistent upper part of the thyroglossal duct, which is formed in the development of the thyroid gland, and opens at the base of the tongue at the position of the foramen caecum. The thyroglossal duct is usually obliterated after the eighth week of fetal life, but may persist, in whole or in part, throughout life.

*Seymour Oppenheimer.*

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**IV.—LARYNX.****Pemphigus Chronicus Vulgaris of the Larynx and Mouth.**

BRYAN, J. H. (*New York Medical Journal*, November 25, 1899.) This rare condition occurred in a woman (age is not stated), who consulted the writer in October, 1898, complaining of a peculiar sensation as of a foreign substance in the larynx for some months. Nasal and pharyngeal tissues were normal. A white membranous deposit

was present about a quarter of an inch in diameter on the laryngeal surface of the epiglottis. Detachment of the membrane revealed a red surface beneath, but no loss of substance. Examination of this tissue showed a fibrinous deposit containing numerous round cells but no epithelium; staining showed a large number of cocci, but no bacilli. At frequent periods after the original examination, numerous other portions of the epiglottis became the seat of membranous deposits, which, after detachment, the membrane below would rapidly heal. During one of these outbreaks a similar deposit was noticed upon the gums. No cutaneous lesion was at any time present.

This condition is rarely found primarily on mucous surfaces, but follows secondary to a cutaneous manifestations. The employment of arsenic in the form of Fowler's solution is recommended by the author. Local applications have no avail. *Seymour Oppenheimer.*

#### **Abscess of the Anterior Surface of the Epiglottis.**

HOWE, ALEXANDER C. (*New York Medical Journal*, October 28, 1899.) A man, aged twenty-four, complained of laryngeal tenderness, increasing dyspnea and dysphagia of three days' duration. Inspiration was more difficult than expiration.

Examination showed the epiglottis to be impinged upon the laryngeal opening by a tumor half an inch in diameter springing from the anterior middle portion of the epiglottis. Incision was followed by a discharge of bad smelling pus and the subsidence of all symptoms. Although necrosis of the cartilage was present no perforation of this structure resulted. *Seymour Oppenheimer.*

#### **Angiosarcoma Linguae et Epiglottidis.**

This case, the second one on record, presented nine years ago, at the age of 25, a growth at the base of the tongue appearing as a smooth, dark-red, movable, hard mass of nearly the size of a pullet's egg, which caused the patient but slight discomfort. One year later the mass was seen to be larger, nearly filling the pharyngeal space, and to have involved nearly two-thirds of the epiglottis. Removal was accomplished with the galvano-cautery snare. Examination eight years later showed no recurrence. *Goodale.*

**The Laryngeal Crises of Tabes in Their Relation to Other Visceral Tabetic Crises.**

TOUCHE. (*Presse Med.*, August 30, 1899.) Among forty cases of tabes, twelve showed laryngeal symptoms and of these latter, eleven manifested also other visceral crises. All degrees of intensity were observed, from a case where laryngeal suffocation terminated fatally to others where the crisis was disclosed only by paroxysms of coughing, resembling those of whooping cough. Gastric crises were most frequently associated, often with rectal and diarrheal crises. *Goodale.*

**Treatment of the Dysphagia of Laryngeal Tuberculosis by Means of a Product of Microbe Culture.**

LAVRAND. (*Revue hebdom. de laryngologie, etc.*, 1899, No. 30.) The new remedy is prepared from an extract of a culture of Koch's bacillus made by Dr. Bourgois of Tourcoing, but the latter is not yet ready to publish his methods and experiments. Lavrand has used the product in a number of cases of severe laryngeal tuberculosis and reports uniformly good results. It is claimed that the extract, usually given three times a day in 5 drop doses in water, is innocuous.

Lavrand reports that he has invariably noticed a marked amelioration of the dysphagia and spontaneous pain even in the cases in which the disease was most advanced. Five cases are reported and the histories appear to confirm the conclusions of the writer. He claims for it not only an analgesic effect but that it exerts a favorable action upon the tubercular ulcerations as well.

*Hardie.*

**Stereoscopic Photography of the Larynx.**

GARES. (*Revue hebdom. de laryngologie*, 1899, No. 27.) The article comprises a brief historical review of the subject, in which full credit is given to French of Brooklyn, together with a description of the writer's instruments and method. The (two) plates which accompany the article show in a beautiful way the excellence which may be attained in laryngeal photography. *Hardie.*

**A Case of Hysterical Larynx.**

HOPKINS, F. E. (*N. Y. Medical Journal*, December 2, 1899.) A young girl of fifteen years, who, during conva-



lescence from an attack of pertussis developed a high pitched piercing sound caused by strong inspiration with the vocal cords tense.

The paroxysm was preceded by a sense of irritation to the throat and slight cough. Subsequently the squealing sound became expiratory as well as inspiratory and in spite of all kinds of treatment, resisted for several months. The insertion of an intubation tube, which was retained for but an hour, brought the manifestations to an abrupt termination.

*Seymour Oppenheimer.*

**Report of an Interesting Case of Dyspnea in an Adult.**

JOHNSON, WALTER B. (*Laryngoscope*, July, 1899.) Patient, aet 26, anemic in the sixth month of pregnancy, developed an attack of "grippe" and almost complete aphonia.

On the tenth day of the illness, following the non-observance of the attendant's directions, the patient left the bed, which was followed by cyanosis, cough, chill, etc., the dyspnea being so marked that asphyxia seemed unavoidable.

The paroxysms of cough resulted in expectoration of large quantities of mucous and blood which temporarily relieved the dyspnea but which recurred with the same severity. Laryngoscopic examination showed marked turgescence of the larynx, the epiglottis thickened and congested. The vocal cords and tracheal mucous membrane could not be seen. The introduction of an adult O'Dwyer tube became a necessity.

It relieved the dyspnea but excited paroxysms of cough, the patient expectorating large quantities of mucous and blood and also a piece of a dark colored material about the size of a large pea.

About ten minutes after the introduction of the tube it was coughed up, but the patient continued to remain comfortable. Large pieces of hard membranous material were expectorated. Laryngeal examination revealed redness and swelling of the larynx extending to the trachea.

During the examination a piece of membrane attached to the larynx was observed to fall into the subglottic space.

This was coughed up and appears to have been a membranous deposit. Microscopic examination failed to show the Klebs-Loeffler bacillus. *Seymour Oppenheimer.*

**Remarks on Clinical Diagnosis and Treatment of Diphtheria.**

SHEFFIELD, HERMAN B. (*N. Y. Medical Journal*, December 30, 1899.) Sheffield mentions the differential points of diagnosis between pharyngeal diphtheria and the various forms of tonsillar inflammation.

In the pharyngeal type of the disease, antitoxin is not employed by the writer, but recently he has used it in the laryngeal form, in which his results have been good.

The value of bacteriologic examination as a means of establishing the positive diagnosis as well as the use of antitoxin is belittled. *Seymour Oppenheimer.*

**Some Points in the Diagnosis and Treatment of Laryngeal Tuberculosis.**

DONNELAN, P. S., Philadelphia. (*Philadelphia Monthly Medical Journal*, November, 1899.) An early diagnosis is essential if treatment is to be of much avail. A suitable climate is a great aid, and in the absence of it as much out door air as possible should be obtained. The usual medical agents are recommended. The author regards the subcutaneous or intravenous injection of cinchonic acid as promising considerable and quotes Landerer's statistics of 110 cases of pulmonary and laryngeal tuberculosis treated by this method, with 57 cures and 29 improvements. "Intravenous injections were given as many as fifty times, at the same spot in the same vein, without giving rise to any irritation. The injections produce a general leucocytosis and an aseptic inflammatory product which leads to encapsulation of the tuberculous nodules." A 1 per cent. to 5 per cent. solution of sodium cinchamate in water is used every third or fourth day. Locally lactic acid preceded by cocain is recommended as doing more good than any other topical application. Curettement is opposed. *Richards.*

## MISCELLANEOUS.

**Unilateral Emphysema of the Fronto-Orbital Region Caused by Blowing the Nose.**

JONCHERAY. (*Revue Hebdom de Laryngologie, etc.*, 1899, No 26.) The patient, aged 15, had been accustomed to use his handkerchief frequently and forcibly before the accident occurred. Temporary loss of vision accompanied the emphysema, which affected the eyelids, the upper to a greater extent.

The writer inserted a probe into what he believed to be the frontal sinus, and removed a polypus from the middle meatus. The boy was well in ten days. Joncheray supposes that there was a congenital defect in the inferior orbital plate.

Hardie.

**The Falling of Adenoid Vegetations Into the Larynx.**

BAR. (*Revue Hebdomadaire de Laryngologie, etc.*, 1899, No 21.) Bar reports the case of a child five years old who was operated upon in the upright position under Ethyl bromid anesthesia, Gottstein's curette being used. The adenoid mass fell into the larynx, and only its prompt removal by means of the finger saved the child's life.

Bar prefers forceps to the curette to prevent the possibility of this accident. He considers the Rose position of the patient unsuited to Ethyl bromid anesthesia but the abstractor agrees with Winslow, (*Journal Eye, Ear and Throat Disease*, Oct. 1899,) in favoring it.

Hardie.

**Tertiary Nasal Syphilis.**

DE CHAMPEAUX. (*Revue Hebdom de Laryngologie*, 1899, No. 26.) The patient, a woman 75 years old, with nasal polypi. Syphilis was not suspected until after the removal of a number of the mucous polypi a perforation of the septum was made out. De Champeaux prescribed inunctions of 2 grams. of mercurial ointment with 1 gram. potassium iodide internally daily with boric acid irrigations. The inunctions were to be continued for 10 days, omitted for 5 days, then begun again. In a little more than two weeks a marvellous improvement had taken place. The fibrous polypi which were being reserved for removal by the galvano-cautery had completely disappeared. The mucous polypi recurred however, and required frequent removal,

and the observation is recorded to show the different effect of specific treatment upon the two varieties of growth.  
*Hardie.*

**On Edema of the Nasal Mucous Membrane and Edematous Occlusion of the Nasal Passages.**

GRADLE, H. (*Laryngoscope*, July, 1899.) The nasal mucous membrane sometimes becomes edematous, causing obstruction of the nasal passages. The edema differs from that observed in the skin in immediately resuming its original contour after discontinuing the pressure with the probe. In its general characteristics it behaves rather like the edema of the skin in a condition of inflammatory edema, rather than a passive dropsical effusion without adjoining inflammation.

The author under these circumstances has noticed two peculiar signs: 1. While manipulating with the probe, the view of the nasal orifice became momentarily obscured by the formation of a fog or cloud caused by the expulsion of fine streams of fluid from the orifices of the dropsical glands of the mucous membrane in consequence of the irritation by the probe. 2. The patient experienced a sensation as if a foreign body was lodged in the nostril. The tendency to keep on blowing the nose continued even after the mucous surface had been entirely cleared of adherent mucus.  
*Seymour Oppenheimer.*

**Confined Suppuration of the Frontal Sinus with Spontaneous Rupture.**

KYLE, D. BRADEN. (*New York Med. Journal*, Dec. 16, 1899.) Kyle reports a case of a woman, aged 60, who a few months following an attack of epidemic influenza, developed a sensation of fullness on the left side of the nose, opposite the inner angle of the orbit, with a profuse discharge of thin, watery secretion from the nose. There was considerable tenderness and swelling between the eyes over the nose.

No discharge could be elicited from the accessory cavities and transillumination gave a negative result. On the removal of some slight crust formation upon the skin over the supra-orbital ridge, a discharge of thick foul-smelling pus took place.

Examination with a probe revealed a mass of necrotic tissue, external spontaneous rupture having taken place.

Irrigation with a warm alkaline solution followed by hydrogen peroxide and saturated solution of boric acid and packing with aristol gauze, resulted in the exfoliation of the necrotic area and the filling up of the frontal sinus with healthy granulation tissue, bringing about a complete cure.

The writer reviews the literature of confined suppuration of the frontal sinus, ending with spontaneous rupture.

*Seymour Oppenheimer.*

#### **Rhinedema.**

CURTIS, H. HOLBROOK. (*New York Med. Journal*, Dec. 16, 1899.) Curtis fails to find mention of nasal dropsy or edema in text books upon the nose or throat.

He has observed in several cases, particularly in patients of a neurotic type, with sedentary habits, decided edema of the intra-nasal tissues. Differentiation must be made between this condition and true hyperplasia.

Many cases of winter hay fever, the writer believes to be of this nature.

He cautions against the use of the galvano-cautery in the treatment of the early stages of this affection, as liable to produce extensive sloughing. The use of the rectal Sitz douche, washing out the colon with sea salt and sodium bicarbonate is one of the best measures for relieving venous stasis.

Systematic gymnastic exercise, brisk walks in the open air, and hydropathic treatment are of great benefit, coupled with the internal administration of digitalis and strychnine. The term rhinedema is used not to designate a disease, but rather to illustrate a distinct intra-nasal condition.

*Seymour Oppenheimer.*

#### **Removal of a Foreign Body From the Bronchial Tube Through the Tracheal Opening.**

COOLIDGE, A. (*New York Medical Journal*, September 30, 1899.) A case of a man, 23 years of age, who had worn a tracheotomy tube for twenty years on account of a laryngeal stenosis.

A few hours before application for admission to the hospital the tracheal tube had become detached and inhaled causing severe coughing and difficult respiration. The employment of the X ray was negative. Under ether

anesthesia the tracheal opening was enlarged downward, the head and shoulders of the patient being held well over the end of the table and downward. A urethroscope was introduced downward within an inch of the bifurcation of the trachea. The foreign body was readily seen in the right bronchus, a short distance below the bifurcation. A long pair of alligator forceps inserted through the speculum grasped and removed the tube without any difficulty. The patient made an uneventful recovery.

The writer concludes that immediate tracheotomy and exploration by means of straight tubes with good illumination is the safest course to pursue. Violent respiration should be avoided, therefore tracheotomy under cocain is preferable to a general anesthetic. The danger of septic pneumonia necessitates the strictest surgical cleanliness.

*Seymour Oppenheimer.*

**Exhibition of a Case of Stammering with Demonstration of the Method Employed in Treatment.**

MAKUEN, G. HUDSON. (*New York Medical Journal*, September 23, 1899). A case of a young man, age, 29, presenting no history of stammering ancestors, in whom this condition began with the inception of the development of speech.

The defect manifested itself by spasmodic contractions of variable frequency and duration of the muscles of the soft palate and tongue resulting in sudden closure during vocalization and articulation, of the posterior palato-lingual chink.

The speech was of a jerky hesitating character, the patient not having control over the respiratory functions during the production of voice.

The treatment consisted in the teaching of the patient to exercise the levator and depressor thoracic muscles in order to overcome the respiratory impediment. Then to combine this mechanism with the vocal mechanism in the production of elementary sounds and syllables, which by persistent practice resulted in an effective manner of speech.

*Seymour Oppenheimer.*

**Some Remarks on the Use of the Suprarenal Capsule in the Nose and Throat.**

SHARP, J. CLARENCE, (*New York Medical Journal*, Aug.

12, 1899). A year's trial of the suprarenal extract in diseases of the nose, pharynx and larynx has convinced the author of its great value in the making of examinations and of its wonderfully astringent and hemostatic properties.

*Seymour Oppenheimer.*

**A Clinical Note on the Connection Between Asthma and Eczema.**

TAYLOR, H. NEVILLE, (*New York Medical Journal*, Oct. 21, 1899). A case of a boy eight years of age showing a direct connection between attacks of asthma, and an associated dermatitis.

*Seymour Oppenheimer.*

**A Remarkable Case.**

BIRD, J. W. (*The Laryngoscope*, Oct., 1899.) A case of a man, running across the yard in the dark, ran into a wire clothes line, which caught in his teeth. The force was so great that it pulled away almost the entire left superior maxillary bone, fracturing the antrum of Highmore.

(The article is very brief and makes no mention of the exact condition of the injured parts.

The author says, however, "that no perceptible scar or deformity resulted," which seems almost incredible.)

*Seymour Oppenheimer.*

**Report of a Case in which Defective Speech Results in Some Interesting Derangements of Cerebral Function.**

MAKUEN, G. HUDSON, Philadelphia. (*Philadelphia Medical Journal*, December 16, 1899.) Dr. Makuen cites a case of a boy fifteen years old with defective speech and limited and faulty movements of the tongue and lips. His speech was very much mutilated and his writing on a par with his speech. Under training the improvement was very great and it is expected that eventually there will be no trace of any defect physical or mental. Dr. Makuen's successes in this and other cases of speech defect show the value of intelligent training in a class of cases often thought to be doomed to life of complete or partial idiocy. *Richards.*

**Electricity in Diseases of Nose, Throat and Ear.**

SCHEPPEGRELL, WM., New Orleans. (*Journal American Medical Association*, February 3, 1900.) A plea for the more thorough study of electro-therapeutics and its application in diseases of the nose, throat and ear. Thus

far electricity has been used by the specialists in this department either as a cauterizing agent or to run mechanical devices. The author thinks it has a much wider range and that galvanism and faradism have many therapeutic indications. He speaks of galvanism as useful in atrophic conditions for its stimulating effect and also in other pathologic conditions by reason of its tonic effect on the vasomotor nerves.

*Richards.*

#### **A Few Remarks on Therapeutic Efficacy in Heroin.**

EINHORN, MAX, New York. (*Philadelphia Medical Journal*, October 28, 1899.) Heroin is a morphin compound the sedative effect of which on the respiration is more pronounced than that of morphin or codein. It is insoluble in water but the hydrochlorid is soluble and the properties of the two are identical: dose  $\frac{1}{20}$  gr. While it chiefly allays cough it has valuable analgesic properties in various painful affections; there are no unpleasant symptoms except slight dizziness and occasional dryness of the throat.

*Richards.*

#### **Sanitaria in the Treatment of Tuberculosis.**

BOWDITCH, VINCENT Y., Boston. (*Medical News*, October 7, 1899.) Bowditch reviews the history of sanitarium and pleads for their general establishment near large towns. He describes the Massachusetts State Hospital for consumptives, the first to be built in the U. S. by the state. It is at an altitude of 1200 feet. The method of treatment is essentially open air living, open windows even in cold weather being insisted upon, moderate exercise, good food and hygiene while specific medicinal treatment is disregarded. The same methods are in vogue at the private Sharon Sanitarium for women, near Boston at an altitude of 350 feet. Both of these sanitarium are for cases susceptible of betterment. 30 per cent. of the "Sharon" cases have been discharged as "arrested" and of these many have remained well over the five years covered by the observations. The author urges the building of such sanitarium near all our large cities, in properly selected sites and thinks if this could be done much would be accomplished toward diminishing the scourge of tuberculosis.

*Richards.*







Dr. Harold Wilson's Case of Necrosis and Sequestrum of the Petrous Portion of the Temporal Bone.—Fragments of the sequestrum consisting of the labyrinthine portion of the temporal bone. An opening into one of the semi-circular canals, probably the horizontal, and the cochlea, are plainly to be seen.

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VII.

SIMPLE ACUTE THYROIDITIS, WITH REPORT OF  
TWO CASES.

BY D. BRADEN KYLE, M. D.,

PHILADELPHIA,

READ AT LOUISVILLE, KY., BEFORE THE SOUTHERN SECTION OF THE  
AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND  
OTOLOGICAL SOCIETY, MARCH 9, 1900.

If journal and text-book literature can be depended upon simple acute thyroiditis is a rare disease. Personally, I have seen only two cases and these within the past few weeks. A careful search of medical literature shows but few authenticated cases reported.

MYGIND (*Jour. of Laryngol.*, March, 1895.) has contributed an interesting paper on acute thyroiditis, of which he distinguishes a suppurative and a simple form. Of the latter he has collected 17 undoubted cases ending in resolution and adds 1 observed by himself. He has also collected 21 imperfectly reported cases. He describes the disease as follows: The disease is more common in females and between the ages of twenty and thirty years. No distinct causes are discoverable; the onset is abrupt, and there is early vague pain in the neck. After a day or two the thyroid enlarges to the size of a hen's egg or to a greater size. The swelling and symptoms subside about

the third day, and often very abruptly. Pressure-symptoms such as dyspnea, dysphagia, hoarseness, or cyanosis, are sometimes observed, and fever is more or less marked in all cases. The suppurative form occurs in septic diseases such as puerperal fever, and is usually distinguished by the character of the fever and general symptoms, together with local signs of suppuration. The prognosis in the simple form is absolutely favorable, and rarely is any lasting infiltration of the gland left after the attack.

E. SHIELDS (*N. Y. Med. Jour.* Oct. 1, 1898.) reports a case of a girl developing normally until ten months of age, when an attack of acute thyroiditis occurred without suppuration, lasting one week and being followed by atrophy of the gland; growth ceased and the child, now seven years old, is a typical cretin.

J. ELIOT used thyroid extract in acute thyroiditis; the swelling subsided and symptoms disappeared. (*Va. Med. Semi-Monthly* Jan. 28, 1898.)

BRADSHAW (*Med. Record* Nov. 2, 1895.) reports a case of acute inflammation with swelling of thyroid gland, which subsided without suppuration, the only alarming symptoms being dyspnea.

LION and BESAUD (*Bull de la Soc. Anat de Paris* June, 1894.) report a case of pneumonia in which, after a slow convalescence had been established, there occurred sudden pain, tenderness and swelling in the neck. The temperature rose to 102.9° F., and an abscess developed in the left lobe of the thyroid gland. This was found to contain a pure culture of pneumococci.

JEANSELME (*Gaz. des Hôpitaux* No. 15, 1895.) contributes a comprehensive study of infectious thyroiditis and strumitis. "Middle age and female sex predispose to these affections, (both cases here reported were males, aged 24 years), and they are very common in the puerperium and after traumatism or in cases in which venous stasis has occurred. Moreover, an enlarged thyroid is especially liable to infectious troubles." He concludes that the immediate cause of thyroiditis is bacterial infection. This may be true, but the casual factor cannot always be traced. He does not recognize the simple acute variety which undoubtedly does exist.

The thyroid gland is similar in structure to the supra-renal capsule and pituitary body and is unprovided with an excretory duct. Originally this does not seem to have been the case. Hamilton in his deductions concludes "that the central lobe appears to have been furnished with a duct which opened on the dorsum of the tongue at the foramen cecum. The lateral lobes are developed from one (the fourth) of the branchial clefts and may be regarded as having been primitively racemose diverticula of the pharynx with alveolar terminal pouches, and he states that without doubt their function was that of mucus-secreting organs. Occasionally the thyro-glossal duct exists in man.

The middle lobe has dwindled down into the isthmus and the occasional pyramidal lobe. The alveoli of the lateral lobes have become shut sacs—the thyroid vesicles. These vesicles still retain their glandular character in the fact that they are lined with epithelium and secrete an albuminous colloid substance. The secretion, however, is no longer poured into the pharynx, as it was originally, but is removed by the lymphatics of and those surrounding the organ. If the gland be squeezed the secretion can be forced into these lymphatics.

The function of the gland, as you all know, is still somewhat problematic, but whatever that function may be, the gland is generally supposed to be comparatively inert in its growth, yet it is of the greatest importance in maintenance of health. Its abundant blood supply would support this view.

The functional activity of the thyroid corresponds with that of the supra-renal, being greatest in youth. It is associated with the greatest general functional activity and its removal in youth is fraught with greater dangers than when removed from the aged.

Glandular involvement, as a rule, causes rapid rise of temperature. This is especially true in the thyroid gland; also the blood seems to be excessively fibrinous. I do not know whether this is true in all cases or not, but in the two cases coming under my observation the marked blood alteration was the increase of fibrin, together with a diminution in function of the red blood corpuscles, which caused deficiency of oxy-hemoglobin. The fact that the

gland seems to have considerable to do with the metabolic changes may account for this rapid change in temperature and excessively fibrinous condition of the blood. It is practically the same change, although not so marked, which takes place in the blood when the patient is suffering from croupous pneumonia.

The thyroid gland in man, although not strictly a secreting gland, does manufacture a colloid-like substance. The gland not having any excretory duct, the secretion is taken up by the surrounding lymphatics. Now, in acute thyroiditis, or inflammation of the capsule of the gland, it would not only interfere with secretion, but also interfere with absorption of that secretion by the surrounding lymphatics, for during the inflammatory process, by throwing out of leucocytes and proliferation of embryonic cells, the lymphatics are closed. When the inflammatory exudate organizes around the gland, and when the gland structure continues to elaborate this gelatinous material, there is, owing to the failure of the lymphatics to perform their function, necessarily an accumulation within the gland structure. This, then, would cause permanent enlargement or goiter.

The symptoms vary, some being slight and local, others severer and accompanied with pronounced general phenomena. It is possible to have an acute thyroiditis in an already enlarged goitrous gland. This is called *strumitis* by the German writers and, as shown by Tavel, is nearly always due to some infection.

Acute thyroiditis may involve one or more of the lobes, but rarely ever occurs in the median lobe. The acute infection may end in suppuration, multiple abscess formation, although fortunately this rarely ever takes place. Tendency to suppuration will be shown by the irregular temperature, chills and general systemic condition of the patient, together with the marked edema within the trachea, larynx and pharyngeal structure. The pus may burrow behind the trachea and even rupture into the esophagus.

In the infectious diseases it is a well known fact that we frequently have chondritis and perichondritis of the thyroid cartilages; these cause considerable swelling and must not be confused with acute thyroiditis. It frequently

occurs in the convalescence of typhoid fever, in which the typhoid bacillus and staphylococci occur: also in conjunction with gastro-intestinal troubles, with bronchitis, influenza, pneumonia and various other infection diseases. In puerperal cases streptococci are most commonly found.

Owing to the enlargement of the gland, there is difficulty in swallowing, disturbance of speech and pain on movement of the neck. The enlargement of the gland may cause considerable and serious compression of the veins and nerves of the neck. Fever is always present, and the temperature is sufficiently like that of typhoid fever to be confusing in the early stage of the disease.

There is usually severe and depressing headache; often considerable vertigo and accompanying epistaxis. In the severer cases with rapid swelling, cyanosis may occur.

Acute thyroiditis usually terminates in resolution, sometimes with induration and infiltration, rarely in abscess formation.

The diagnosis from simple congestion of the thyroid, acute exophthalmic goiter, hemorrhagic goiter, and other thyroid affections is made by the presence of the fever, pain and other signs of inflammation.

Acute thyroiditis is a rare condition. The idiopathic cases are rarer, usually being traced to an acute process.

The first case which I wish to report presented himself at my clinic at the Jefferson Medical College Hospital and as I was absent from the clinic that day my chief of clinic sent him to the medical ward. Professor Hobart A. Hare, who was in charge of the medical ward confirmed the diagnosis. I am indebted to Dr. John C. DaCosta, Jr., for the blood examination. The history of the case is as follows:

Jacob Weiss, age 24 years; single; by occupation a tailor. His family history is good; father and mother, two brothers and two sisters living; no tubercular history. The patient stated that he had a hard chancre six years ago; he received treatment and has had no evidence since of the infection.

His present trouble began on the 13th of February, 1900. It began with a feeling of soreness in the throat, which was more pronounced on swallowing. There was a sensation of swelling or fullness within the throat which

was more pronounced on swallowing. Three days later he noticed an enlargement in the median line over the thyroid gland. When admitted to the hospital this swelling had extended from the median line backward to the sternocleido-mastoid muscle and down almost to a level with the clavicle. There was a slight enlargement on the right side, although not as marked as on the left. Palpation showed this swelling to be in the lobes of the thyroid gland. The tumor was not adherent to the overlying tissues; it was extremely painful on pressure. The external surface was slightly reddened and there was a decided increase in local heat. Swallowing was more painful and the laryngeal examination showed decided congestion, not only cyanotic, but inflammatory, involving all the laryngeal and surrounding structures. The patient was markedly depressed and had that pallor characteristic of infection. He had severe headache and loss of appetite; the tongue was decidedly tremulous, showing imprints of the teeth. There was a slight tendency to constipation, although the movements of the bowels were fairly regular. The heart and lungs were normal. The temperature chart resembled somewhat that of a typhoid fever case, rendering the diagnosis rather difficult, the morning and evening temperature differing from one to three degrees, the highest point which it reached was 104. The urine examination was negative, except a low percentage of urea. The patient was discharged March 1st, there being no constitutional symptoms and only slight enlargement of the gland.

The treatment consisted in confining the patient to bed and the administration of  $\frac{1}{10}$  grain of calomel with 1 grain of soda every hour for eight doses. This was kept up for several days and each morning a saline was administered. Cold was applied in the form of ice packs. The patient was given stimulative nourishment and recovered in some eight or ten days. When he left the hospital there was very little swelling.

The second case I did not see during the markedly acute stage, but the history is practically the same as in the first case. When he consulted me his history was as follows:

Mr. H. C., age 24 years; of good family history and in excellent physical condition. One month before consult-



ing me (about the 15th of Februry) he noticed a soreness on swallowing and experienced a sensation of a swelling in the throat. On examination he noticed an external swelling. This increased for several days and both lobes of the thyroid gland became extremely sensitive, with marked enlargement. The swelling increased the neck circumference about one inch and a half. There was marked external redness and considerable difficulty on swallowing. He was treated at the time by laxatives and external applications of cold. The soreness disappeared as well as part of the swelling, but after three or four days upon the disappearance of the soreness, which was some eight days from the onset, both lobes of the gland began to enlarge and when he presented himself for examination both lobes were extremely enlarged and very solid with no evidence of inflammation. There was some swelling and cyanotic edematous infiltration within the larynx. The condition as it presents itself resembles true goiter. In this case, as I suggested elsewhere in the paper, I believe the enlargement was due to the fact that the lymphatic absorption had been cut off, causing retained secretion within the gland. He is now under treatment, taking four times daily, 5 grain doses of thyroid extract.

It is a curious coincidence that these two cases should have occurred at about the same date and that both were males 24 years of age. Was it that the climatic conditions influenced certain individuals at this time, rendering them susceptible to infection, or was it a mere coincidence?

1517 Walnut st., Philadelphia.

## VIII.

### A CASE OF ACUTE THYROIDITIS OF RHEUMATIC ORIGIN. (THYROIDITE RHUMATISMALE AIGUE).

RHEUMATIC PHARYNGITIS, PAINFUL JOINTS, INFLAMMATION OF  
THE THYROID GLAND, SUPPURATION, RECOVERY.

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Among the etiologic factors of idiopathic thyroiditis, rheumatic infection, if we may so call it, or the rheumatic influence as it has been styled by others, has held a prominent place.

This view, already enunciated by older physicians, as Ph. Fr. Walther, was again affirmed at a later date by Kocher and others, and most strenuously, with much clinical demonstration, by French observers as Raymond, Vulpian, Charcot, Zouiwitch.

Another prominent causal factor is said to be atmospheric changes, "Reffroidissement," "Erkaeltung." Lebert assigns this as a cause in 9 of the 50 cases collected by him from various sources. In the Dictionary of Medicine edited by Quain (first edition), it is stated that idiopathic thyroiditis "is generally due to sudden atmospheric changes."

If now, as the author of the particular article in the Dictionnaire Encyclopaedique de Medicine et de Chirurgie (Dechambre, III Serie) seems inclined to do, we take *refroidissement*, *erkaeltung*, *sudden atmospheric changes*, to be synonymous with rheumatic infection or rheumatic influence, and there is good ground, as can be readily understood, for so doing—the importance of this latter as an etiologic factor of this form of thyroid disease, is cer-

tainly much magnified. Of all the cases of acute idiopathic thyroiditis reported, 50 per cent. or more would be of such causation.

Latterly, however, much doubt has arisen as to the correctness of this teaching, and it has been clearly and definitely expressed by Ewald. Reviewing the reported cases, he finds that a large number are cases of strumitis, and should therefore, not be included in this category of idiopathic thyroiditis. In quite a number of others, the causal relation between the rheumatism and the thyroiditis is not clearly established. Finally, after all this elimination, the question is raised as to the few remaining cases—whether they should not rather be looked upon as complication or sequel of the rheumatic fever, than as idiopathic cases.

There is really, according to this eminent authority, no such affection as acute idiopathic thyroiditis of rheumatic origin, or as it has been styled by French writers, *thyroïdite rhumatismale aigue*.

As to the French observers, he says it is well known that they have an inherent tendency to bring all parenchymatous inflammations into more or less intimate relation with a rheumatic diathesis or influence.

In view of all this, any clinical fact that may further aid to elucidate this question, is certainly of interest; and it is for this reason that the following case is here recorded:

F. B., aet. 22, female, single, 5 feet 3 inches in height; of large build; in fair flesh; German, but 8 months in this country. Lives with her sister and does housework for the family.

The evening of Feby. 25, 187-, I was called to see her. She complains of pain in her throat, and of difficulty in swallowing. Looking into the mouth, I found the roof, the posterior part thereof, the palatine arches, and the posterior pharyngeal wall, reddened and inflamed. Tonsils not enlarged. Some fever; temperature 103°. Completing the examination of the mouth, and whilst taking her temperature, she informed me that her left knee also caused her considerable pain. Examining it, I found no redness, no tumefaction, no tenderness to touch, but there was evidently some elevation of temperature as compared with the right knee.

I painted the inflamed throat with a mixture of iodine and glycerin (ijss to vss) and prescribed quinine (in solution with dilute sulphuric acid) 3 grains every 3 hours. As to the knee joint, I directed that flannels wrung out in hot water be applied to it.

On my next visit, the following day, I found the patient much better. The pain in the throat was entirely gone, and she could swallow very well. The fever had subsided. Looking into the mouth, I found the parts greatly improved, the redness almost entirely gone. Nevertheless, as a precautionary measure, I made another application, a light one, of the iodine and glycerin mixture, and directed that the quinine solution be continued for another day, at intervals of 4 hours now. The knee joint was also much better; the pain was entirely gone and the temperature the same as that of the well joint. I left with directions that if necessary, I should be called.

March 2nd. Was again called to see Miss B. She again complained of pain on swallowing, and pointed to a swelling under the lower jaw, a little to the right of the symphysis menti. She complained also of much pain in the left shoulder joint and over the biceps and triceps muscles of that arm. Looking into the mouth, I found the parts there and beyond normal in appearance. I directed that the swelling under the jaw, as well as the painful joint, be painted with tincture of iodine, and for internal administration prescribed iodide of potassium with vinum colchicum, to be taken t. i. d.

The pain in the left shoulder and arm were soon greatly improved, but the swelling under the jaw continued to increase in size despite all treatment. It grew larger and larger; extended over to the left beyond the median line and downward in front of the larynx, toward the sternum. Resolving unguents proved equally ineffectual. The swelling looked red, glistening, tense. Morning temperature 102° F. As the swelling became greater, the dysphagia became more marked, so that even the swallowing of fluids was at last attended with considerable difficulty. There was also some dyspnoea, most severe at night, so that the patient got but little sleep; the shortness of breath woke her up every little while, she said.

I directed now, that the swelling be poulticed (warm

flaxseed poultices). By the 8th, a soft, fluctuating spot could be detected in the centre of the swelling: by the 11th, the whole anterior portion of it was soft and doughy to the touch. To be certain that the fluctuation was due to pus, and as a precaution, I introduced, in the presence of a colleague now deceased, a hypodermic needle; a drop of blood followed, but no pus. I repeated the process at several points, but always with the same result. I abstained from further interference and continued the poultices. In the afternoon, when I called, I found pus exuding from all the punctures. The swelling was incised, and an enormous amount of pus evacuated. The patient recovered rapidly.

A rather peculiar feature was that after the abatement of the suffering in the swelling, after the incision, the pain in the left shoulder became again more prominent. Whether it had always been the same but had only been masked by the greater suffering caused by the inflamed thyroid, or whether it was really an exacerbation due to a concentration, now, of the disease in that part of the body, is a question that I could not solve. The joint continued rather stiff and more or less painful until the warm weather had well set in.

There can certainly be no question here as to the rheumatic nature of the morbid manifestations; the particular character of the pharyngitis, the pain in the joints, now here now there, are demonstrations that cannot be gainsaid.

Furthermore, it is a case of idiopathic inflammation and not a complication or a sequel. It does not appear after the disease has already lasted a more or less long time, with more or less severity—a period when complications may be usually expected, nor at its finality, but ensues at the very outset of the rheumatic infection, and becomes the point of greatest virulence of manifestation of the *materies morbi* present in the system.

It is clearly evident, therefore, that in this case at least, a diagnosis of acute *idiopathic* thyroiditis of rheumatic origin, or acute rheumatic thyroiditis, is fully justified.

Another and certainly interesting feature in this case, and not to be lost sight of in the much graver affection of the thyroid, is the *rheumatic* pharyngitis. As related, it

answers fully to the classical description first given of it by Trousseau. It seems to be a rather rare affection. Most of the works on diseases of the throat that I have consulted give it but little space, and content themselves with repeating the description of Trousseau already referred to. The authors seem not to have met with the disease itself.

It may be that this is because, as Morrell Mackenzie has it, it is very difficult of recognition unless accompanied by other phenomena of the rheumatic infection.

In my own experience, I can recall but one other such case.

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## IX.

### NECROSIS AND EMPYEMA OF THE FRONTAL SINUS.—OPERATION.\*

BY THOMAS R. POOLEY, M. D.

NEW YORK.

On the borderland between the surgery of the eye and nose, lie the operations for the various affections of the accessory sinuses, involving as they do both of these organs in the train of symptoms to which they give rise, whether the disease be the varying degrees of an inflammatory origin, caries, necrosis, or neoplasms. Sometimes the eye symptoms are dominant, again this organ may be immune and the nose only affected.

Since all of these pneumatic spaces communicate more or less directly with both the nose and the orbit, it comes within the province of both the rhinologist and ophthalmologist to deal with them. A recognition of the fact of the connection of certain growths which invade the orbit with these cavities or air spaces, has proved of much value to the operator on the eye, especially in the more clearly ascertaining that many of the orbital tumors such as sarcomata, exostoses and other growths of the orbit usually originate in them, and for their radical removal they must be followed into their habitat. This statement is true not only of such neoplasms, but also of those tumors of the orbit called retention cysts, which are the direct result of catarrhal or purulent fluid in the sinus through obstruction in the nasal conduit.

While, therefore, most of the symptoms developed in the case above cited, were such as to cause the patient to apply for relief to an ophthalmic surgeon, rather than a rhinologist, I am, nevertheless, led from the considerations already mentioned to present it to this Society, coming as

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\*Read before the Eastern Section of the Am. Laryn. Rhinol. and Otol. Soc., Feb. 17, 1900.

it does within the domain of their branch of surgery as well as that of the ophthalmologist.

I shall briefly report the case and operation, and then pass hastily in review, the symptoms usually occurring in such cases, and the several operations which have been practised for their cure, dwelling with more emphasis on those which come within the special care of the ophthalmic surgeon.

The patient, a healthy strong looking man, consulted me on December 8th, 1899, by the advice of a colleague, who thought an operation was necessary, and kindly asked me to do it. The following history of the case up to the time I saw him is kindly furnished me by his physician Dr. Jno. W. Kniskern.

"Mr. W. E. Y., aet. 38. Merchant.

Had syphilis 16 years ago. Otherwise in good health until 1895. In 1895 had an attack of influenza, followed in two weeks by scarlet fever. During the latter part of the attack an abscess developed in the orbital region associated with considerable orbital cellulitis. This finally pointed and broke in the superciliary region, midway between the canthi. Following this the abscess discharged for about six months. This was treated by his physician, by daily irrigations for a time and finally it was daily scraped, the presence of dead bone having become manifest. This treatment was directed toward the relief of a supposed denudation of the orbit and the curettage was directed toward the removal of this orbital dead bone.

In 1896 his physician decided to operate for necrosis of the orbit and did so without however getting any sequestra. Following this operation there was marked retraction of the upper lid so that he was unable to entirely close the lid at any time.

In the winter of 1897 he visited Philadelphia where he was again operated for the retraction of the upper lid. The incision was made in the line of the original incision, the cicatricial bands were loosened, the lid was partially restored and the sinus closed. The sinus was in the original location and had never entirely stopped discharging until this operation. For more than a year following this operation the discharge from the site of the old sinus entirely stopped.



In the spring of 1899 the sinus again began discharging. Mr. Y. consulted the reporter, being exercised about the increased retraction of the lid. The exact condition was not fully realized for about two months, the constant discharge being attributed to some orbital necrosis until June of the same year when in searching for necrosed bone the probe suddenly slipped in an opening which terminated in the region of the inner canthus. A diagnosis of a frontal sinus trouble was made and confirmed by Dr. Mittendorf who saw him in consultation at that time. July 27, 1899, an operation was attempted at his home by the reporter. It was hoped that the sinus trouble might be relieved, but upon opening the region the complications seemed so grave that the reporter only removed a small sequestrum that readily presented itself, contenting himself by only restoring the lid by a plastic operation. The subsequent course was the old story of retraction of the lid and no permanent benefit. In October another operation of a plastic nature was done, resulting in a partial restoration of the lid which remained until January of 1900, when a consultation was again had with Dr. Mittendorf. A radical operation was proposed and accepted by Mr. Y. which was at once performed, Dr. Pooley being the operator."

When I saw him there was a swelling of the brow of an indurated character hemispherical in shape extending from the upper inner corner to about the middle of the orbital margin, and at this point just below the brow there was a fistula with pouting edges, clearly pointing to the presence of dead bone; the upper lid was drawn up in this direction and firmly adherent to the puckered indrawn scar—so as to cause a decided though not extreme ectropion with slight eversion of its margin. Because of this condition complete closure of the eyelids was impossible and there was a small chink in the palpebral fissure which kept the cornea constantly exposed. In spite of this the cornea was clear, however, there being no infiltration nor ulcer to be seen. Through the fistula a blunt probe could be passed upward, backward and inward into the frontal sinus—and the presence of dead bone detected. There was a constant but not profuse discharge of a muco-purulent character from this opening. There was no marked displacement of the eyeball nor diplopia. Vision was unim-

paired and the fundus oculi normal. It was for the relief of the frequently recurring frontal headaches, the annoyance of the constant discharge and the deformity caused by the ectropion that he sought relief; but the constant menace of other complications, such as erysipelas, meningitis or cerebral abscess, was to be considered, and a radical operation was therefore advised and promptly consented to by the patient.

December 9th I operated, the patient under ether, in the presence of his physician, Dr. Kniskern, Dr. Mittendorf, Dr. Claiborne, Dr. Myles and others. I am especially under obligation to Dr. Myles, both for his valuable assistance and counsel during the operation, who from his large experience in these operations and through acquaintance with the subject, was of great help to me.

The eyebrows having been shaved, an incision was made along the upper border of the eyebrow from the nasal end to the centre, including in the incision the fistulous opening; the periosteum was detached and held out of the way by retractors.

The anterior wall of the sinus was then opened by the use of a chisel toward the inner side, and gradually extended outwards so as to expose the entire frontal sinus which was distended much beyond its usual dimensions and filled with polypoid granulations; no pus escaped. The sinus was now explored with a probe, in every direction; in the nasal part were found two small pieces of carious bone which were removed. In the outer part corresponding to the point of the fistula the probe detected loose bone, which was seized by forceps and carefully removed without force. It was a thin sequestrum with a perforation in it, through which the probe had passed. The sinus was then most thoroughly cleaned by scraping out the polypoid granulations with a sharp spoon. A catheter was passed from the sinus, through the ethmoidal cells into the naso-frontal canal and the infundibulum and out of the nose. On the end of the catheter was an eyelet through which a thread was passed and attached to a soft rubber tube which was then drawn through, carrying the tube with it, one end coming through the opening in the sinus, the other through the nose. The ends of the tube were tied together to keep it in place and the cavity packed with strips of iodoform

gauze; over this was placed a pad of the same material, some absorbent cotton and the whole held in position by a firm roller bandage. The operation was somewhat protracted; there was considerable hemorrhage but the patient well rallied. On the second day there was a little rise of temperature, but the next day the temperature fell to the normal.

Three days after the operation he returned to his home in a distant city with his medical attendant. I have heard from him but once since his return, through a letter from his physician who reported that the case was progressing favorably, the wound was looking well, and the drainage through the nose was effective. I may add that there was but little relief to the ectropion effected by the operation; it was found impossible to release the scar which caused it from its attachments and a blephoraplastic operation will most likely have to be done.

This case shows in succession the several stages in which the disease progresses. The first stage is the propagation of a catarrhal rhinitis into the sinus. The fronto-nasal canal is narrowed by swelling of the walls, leading at first to intermittent, later to permanent retention of secretion in the sinus. The symptoms are chronic or sub-acute rhinitis with frontal headaches. This stage is usually amenable to treatment by proper treatment of the nose. Second stage—a swelling occurs along the upper border of the orbit in the upper inner angle of a hemispheric shape; there is usually no tenderness and fluctuation is not readily made out, and size of swelling varies. The posterior limit cannot be made out. Eyeball is (not always) displaced forward and inwards. The development is slow. Empyema may be mistaken for sarcoma or osteoma.

The third stage is characterized by the occurrence of caries and fistulous openings.

Before I consider the different operations which have been practised, it may be added that syphilis, tuberculosis and other diseases may produce an osteo-periostitis of the frontal sinus accompanied or followed by external caries or necrosis with profuse suppuration and that the frontal sinuses may be invaded by the pus, but always in the direction from without inwards.

The operations which have been made are the following:

(1) Evacuation of the contents of the sinus by simple puncture. It gives temporary relief but the sinus will almost invariably fill again.

(2) Opening of the anterior wall, removal of polypi and dead bone with a sharp spoon, draining the cavity with a perforated silver tube or sterilized elastic one, syringing the cavity with caustics and antiseptics. Knapp says it cures about 50%, that the duration of treatment is very long and relapses frequent. It really amounts to the establishing of a small fistula which has to be syringed every day for a long time and I venture to say ought to be superseded by the more radical operation.

(3) The method known as the radical operation, which while it is particularly applicable to the third stage of the disease, caries and fistula, seems to me might also give the best result in the second stage. It is done after the same method as that for chronic suppuration of the middle ear. All the carious and necrosed bones are removed and the communication with the nose re-established or the cavity closed by granulation and epidermization.

It is interesting to note that this method now in much favor in some form or other is not new, but was described in English and Continental literature 150 years ago. L. H. Runge<sup>1</sup> describes obliteration of the sinus frontalis by his father.

Panas in his treatise on Ophthalmology (Vol. II p. 474, 1894) recommends trephining of the frontal or orbital wall combined with a drainage tube which he draws with a curved catheter into the fronto-nasal canal. The method was employed by me except that the wall of the sinus was opened with a chisel instead of trephining and a difference in the site of incision used to enter the sinus, so that I need not go over again the description of the technique of the operation, only to say that Panas speaks of the deformity left which he says may be modified by following the rule which he has laid down, to form a triangular flap consisting of the whole integument of the glabella and the periosteum, the base being above one line along the median line, the other in the orbito-palpebral groove.

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<sup>1</sup>Hallei Disput. Chir. 1750.

Panas says the length of time required too is an objection, to avoid which all the anterior wall may be removed, but this leaves an unsightly scar, as Kalt has done in one case when the recovery was very rapid. Kuhnt in his monograph on the inflammatory diseases of the frontal sinuses (Wiesbaden, 1895) recommends essentially the same method as Panas and says the disfigurement was avoided if the periosteum was preserved. Others who have recommended the radical method are Nebinger<sup>1</sup> (from the interior wall) and Jansen<sup>2</sup> from the lower wall.

(4) Finally a method called the osteo-plastic opening of the frontal sinus was described at the meeting of the International Medical Congress at Moscow, August 19th, 1897, by Dr. S. Golovine, which was a modification of the operation of Prof. Czerny. "He makes an incision along the upper border of the eyebrow from the nasal end to the centre then another small one through the nasal end of the first incision from the lower margin of the brow obliquely upward and inward.

A curved incision of about two centimeters in height is now made through the periosteum, the basis of which is formed by the inner third of the upper margin of the orbit along this line, the bone is opened with a chisel. The osteo-periosteal flap thus obtained, and forming the anterior wall of the sinus can easily be lifted and turned on its base, the periosteum and soft parts remain intact. Through this opening the frontal sinus is now examined and scraped and drainage into the nasal cavity by an elastic catheter is established. After which the flap is put back in place and the skin-wound hermetically sealed."

There has been primary union in all of his cases with a satisfactory result.

On the whole the results of the operation for empyema of the frontal sinus are good, the headaches and cerebral symptoms disappear and the eye returns when displaced to its normal position without loss of function. Without such interference a fistula may exist as it did in this case for years and brain complications ensue at any time.<sup>3</sup>

<sup>1</sup>Described by Baum, Inaugural Dissertation, Erlanger 1890.

<sup>2</sup>Jansen, Archiv. für Laryngologie Bd 1 No. 2.

<sup>3</sup>Since this was written I have received the following report of the progress of the case from Dr. Kniskern:

“At present the status of the patient is as follows:

The drainage tube was removed on Feb. 2, 1900. Following this the sinus was packed through the opening preserved by the tube until the present, (Feb. 16th) at which time the discharge is merely nominal, all inflammatory reaction is apparently absent and the opening presents an appearance as nearly normal and healthy as seems possible.

An interesting point in this case is that the retraction of the lid which increased after the January operation has materially subsided since the removal of the drainage tube.”

## X.

# LESIONS OF THE FRONTAL SINUS AND ANTERIOR ETHMOIDAL CELLS AND THEIR SURGICAL MANAGEMENT.

BY ROBERT SATTLER, M. D.,

CINCINNATI, O.

The inaccessibility of the air-spaces of the skull, as well as the rarity with which these cavities become affected, have rendered the diagnosis of such lesions to some extent, difficult and the surgical measures undertaken for their relief, more or less unsatisfactory. In the attempt to clear up this rather obscure field, general, ophthalmic, rhinologic and oral surgery have each, during recent years especially, contributed a certain share towards a better knowledge and understanding of the lesions which invade these spaces. This has led to a more rational and eminently more satisfactory surgery.

That ophthalmic surgery has contributed important diagnostic, as well as many practical suggestions directing a more successful management of these cases, is due to the intimate topographical relationship of the anterior ethmoidal cells and the sinuses of the frontal bone with the margins, cavity and contents of the orbit. The fact must also be admitted that in lesions of this class (which include those of the maxillary sinus as well and also the still more uncertain lesions of the sphenoidal sinus) ocular and orbital symptoms are often the most conspicuous features which are present and even if less conspicuous, they may happen to be the only evidences by which the origin and seat of the disturbances which develop, can be traced to these concealed recesses of the skull.

It is of interest to note that Mackenzie in his classical work on Diseases of the Eye, gave a lucid description and anticipated the exploration and opening of all the sinuses (even the sphenoidal) for diagnostic and surgical purposes.

The literature of general surgery also contains frequent reference to this subject.\* It was not until more recent years, however, that the extensive anatomic and pathologic researches of Kuhnt (1), Luc (2), Derrien (3), Fraenkel (4) and especially the exhaustive investigations of Zuckerkandl (5), aroused renewed interest in the affections of the frontal sinus and its accessory cavities.

These anatomic researches have fully corroborated what has long been accepted, that the frontal sinus is absent at birth. The real sinus-cavities whose function like that of the ethmoid cells and maxillary sinus, is mainly to lessen the weight of the forepart of the skull and to add resonance to the voice, appear during the first year of life. During early life, they remain of small dimensions and develop only very slowly. It must not be assumed, however, that during this period the frontal sinus is not the seat of disease. On the contrary, in early life and infancy, we not infrequently meet with lesions of the frontal sinus and its anterior ethmoidal cells, although the former is present only as an interspace and the latter are small, but in free communication with the sinus. In these cases, the anterior cells adjacent to the frontal sinus and in some instances even those communicating with it, are commonly affected. The walls are so thin that the contents are extruded into the small cavity of the sinus and are either discharged (among symptoms resembling local periorbitis) into the nose or become incarcerated, followed

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\*Even in the early history of surgery, isolated instances of operations on the sinuses occur and Morgagni relates that the frontal sinus was opened and a worm removed by Cesar Magatus, a surgeon of Bologna. Occasional mention of the limited external operation is also found during the last century. In the earlier part of the present century, Dezeimeris published a comparatively important treatise on this subject and somewhat later, Bouyer added some interesting histological and pathological results.

(1) Kuhnt:—Die Entzuendlichen Krankheiten der Stirnhohlen

(2) Luc:—L'Etude des Suppurations des Sinus frontal.

(3) Derrien:—Etude sur L'Empyeme des Sinus frontal. Thèse Paris.

(4) Fraenkel:—Beitrag zur Pathologie und Aetiologie,

(5) Zuckerkandl:—Anatomie der Nasenhohle.

See also, Lothrop: Anatomy and Surgery of the Frontal Sinus, a recent work which came under my notice while this article was in preparation.



by inspissation or even, as in a case under my observation, by periostosis of the affected region.

At puberty, owing to the recession of the brain, the sinuses undergo considerable enlargement. In advanced life, owing to the absorption of the cancellated tissue in their vicinity, they sometimes undergo perceptible increase of dimensions. They are relatively larger in the adult male than in the female and the sinus on the left side is commonly the larger of the two. Variation in size is marked in different individuals and in rare cases, the sinus attains an enormous size, a dilation which generally must be looked upon as purely physiologic, although a latent pathologic process cannot always be excluded. Occasional anomalies of shape and structure (such as a poorly developed or abortive sinus with the absence of the vertical portion) are occasionally met with, but the complete absence of one or both sinuses is exceedingly rare\*.

In the search for the various causes which are responsible for lesions of the frontal sinus and anterior ethmoidal cells, it will be found that traumatism plays a not infrequent role. Fractures of the walls of the frontal sinus occasionally occur, and may lead to infective and obstructive processes. In these cases, it has happened that the secretion from the sinus has been mistaken for a discharge from the cranial cavity. A curious emphysematous condition of the eyelids, scalp and face sometimes also makes its appearance, a phenomenon which is due to the forcing up and escape of the air through the fronto-nasal canal and under the overlying soft tissues of the brow and frontal region. Foreign bodies also may lodge in the

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\*Race is also a factor in sinus development. The sinuses in Europeans are larger than in negroes and they are very imperfectly developed in Australians,—a deficiency to which some attribute the peculiar lack of vocal resonance in this race. It is of interest to note that the air-cells admit of much higher development in certain mammals and birds than in man. This applies especially to the ruminant and some other quadrupeds where the sinuses extend backwards over the top of the skull and penetrate the cores of the horns in oxen, antelopes and sheep. The elephant, however, according to Prof. Owen, presents the most remarkable development of air-cells:—"the intellectual physiognomy of this huge quadruped being caused, as in the owl, not only by the actual capacity of the brain-case, but by the enormous extent of the pneumatic cellular structure between the outer and inner plates of the skull."

sinus. In rare instances, calculi composed mostly of lime may be formed within the sinus-cavity. Bullets, projectiles of all kinds, knife-blades, scissors broken off in their passage through the skull, may also become arrested and lodge here. The most interesting feature in this connection, however, is exhibited by foreign bodies which gain admission to the sinus by the natural channels. Reference is here made to the introduction of the ova of insects, maggots, etc., which are deposited on the mucous membrane of the nose or may be inhaled from flowers and fruits.\*

As a rule, inflammatory states of the frontal sinus and its connecting air-spaces, are due to local causes. General and systemic infection, however, not infrequently occurs. The part which syphilis plays in chronic sinus affections has long been recognized. But recent researches in pathology and bacteriology (especially the investigations of Weichselbaum and Fraenkel) prove conclusively that acute systemic disease not infrequently attacks the sinus-cavities. In 146 autopsies made by Fraenkel in acute disease (scarlet fever, diphtheria, influenza, cerebro spinal meningitis, etc.) he found the sinuses affected in 63 cases, the frontal sinus being least commonly and the maxillary sinus most frequently involved.

As regards the more common local causes, it will be found that inflammation of the frontal sinus may be due (1) to the transplantation of pyogenic products from the adjacent nasal cavity, or, in less frequent cases (2) to the direct extension (along the mucous lining or bony walls) of intra-nasal disease by way of the connecting channel or frontal canal.

The symptoms in the rare cases of acute sinus inflam-

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\*In India where this disease of the sinus is known as "Peenash," this exciting cause is quite common and the progress of the affection is marked by a pronounced muco-purulent discharge and often results in a necrotic and gangrenous condition of the eyeball, the bones of the face and the soft parts. Centipedes have also been found in the frontal sinus and according to Fraenkel "may remain there a number of years, the secretion of the oavities furnishing them sufficient nourishment." In a case reported by Gross, a child lost its life by the development of a large number of spiders," the parent-spider being most probably inhaled while the patient was smelling a flower."

mation do not differ materially from those accompanying the formation of pus in other closed cavities of the body. More or less fever at the onset, rigors, local swelling and edema, constant, severe and increasing pain unrelieved by anti-neuralgics, together with the previous history of an acute coryza, generally point conclusively to empyema of the frontal sinus. In some instances, the morbid process is brought to a close by the rupture of the sinus into the orbit or by the escape of the imprisoned pus into the nose, but in a typical case of empyema anything short of immediate surgical interference, means to invite cerebral complication and other serious sequelae (caries and necrosis of the walls of the sinus, etc.).

In taking up the consideration of the chronic lesions of the sinus, it must be stated that, for an indefinite period, such lesions, or their final expressions, may run an entirely latent course both as far as local and constitutional disturbances are concerned. The low grade of inflammatory activity which commonly attends such processes and the compensatory hypertrophy or sclerosis of the walls which is hereby excited, combine to decree for the incarceration of pyogenic matter, granulation-tissue, inspissated pus, etc., an almost latent course with uncertain or absent clinical features.

Among the first tangible evidences is a diffused local tenderness of the upper marginal region of the orbit, without redness or swelling over the affected region. This is generally unilateral as it is rare to find both cavities affected at the same time. This gives way to transitory, painful swelling of the periosteum and bone, often with redness and swelling of the overlying soft parts. These symptoms come and go, lasting generally several days or weeks. Headache now becomes general. At the same time, there will be observed a characteristic indication, and this is, a change of contour of the inner, upper and in some cases even, of the inferior margin of the orbit. If the lesion is unilateral, and it generally is, the asymmetry of this important part of the face and the change of physiognomy which it entails, point with significance to an existing sinus-lesion. If tenderness on pressure or percussion is present, it is even more suggestive of this view.

The most careful rhinoscopic examination fails to disclose more than a chronic catarrhal process which is known to have been present and to which also the symptoms due to the sinus-complication are assigned. In some cases even, the symptoms of an existing nasal lesion are in abeyance during the progress of the sinus lesion.

If the grade of inflammatory activity remains low, it may happen that a chronic empyema may undergo partial absorption or inspissation and terminate in a contraction of the cavity with increased thickening of the walls; in other words, hyperostosis results. It may also happen at this stage, or with the presence of the symptoms referred to, that a spontaneous evacuation through the fronto-nasal canal into the nose effects, in some cases, temporary arrest, and in a few, termination of the sinus-lesion. In exceptional cases, in which hyperostosis of the walls takes place and recovery without external perforation results, there may come about as a remote sequence, neuralgic seizures of extraordinary severity and duration. A more frequent result, however, is the yielding of the walls at one or another point. In children, this is not infrequently the temporary angle of the sinus, but with them and with adults it is more often the lateral or orbital walls at a point near or even below the inner canthus of the eye.

The periorbita in this locality is firmly attached to the bone and is furthermore reenforced by the orbital fasciae and medial ligament and this explains the resistance which is offered to the burrowing pus. For this reason, the dissecting trail is often deflected and pushes its obstructive work lower down while its most frequent outlet is under and at the outer or temporal border of the tear-sac. Not infrequently, several fistulous openings discharging the contents of the sinus frontalis appear along the orbital margin near the middle or even its outer division. They may also undermine the periosteum tear-sac, erode the os unguis and superior maxillary of this region and without external perforation, discharge their contents into the nose. In particular do we observe this in broken-down syphilitic subjects. In such cases, both internal and external perforation is likely to take place.

The earliest ocular manifestations\* are observed on the

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\*The Ocular and Orbital Symptoms of Lesions of the Frontal Sinus." (Medical News, Aug., 1899.)

part of the eyelids. A serous infiltration of the loose cellular fasciae of the roof of the orbit dependent upon and associated with the transitory exacerbations of the insidious sinus lesion, may interfere with the action of the levator muscle of the upper lid and also with the superior rectus muscle. Drooping of the upper lid and slight restriction of motion upwards is often observed. Proptosis due to the same cause and lateral displacement of the globe may also be present even at this early period. To these symptoms are added an edema of the inner third of the upper lid with dusky discoloration. This is, in some cases, so much like the inflammatory edema and tissue-infiltration which attend a suppurating chalazion, for which it is not infrequently mistaken. On the part of the conjunctiva,—especially the retrotarsal and ocular divisions,—engorgement of the venous channels, and frequently, chemosis are observed. This is not of inflammatory origin, but is due to obstruction of the outflow of the venous channels. In some cases, the upper fornix at this point is evulsed. Pus-trails may cause this and discharge their contents into the conjunctival sac.

The symptom of proptosis is a variable one and is not in conspicuous evidence even in pronounced cases of uncomplicated frontal sinus disease. In those cases in which a necrosing syphilitic lesion invades the ethmoidal cells and frontal sinus jointly, or all the pneumatic cavities are involved, this is almost uniformly present.

A feature of the exophthalmos accompanying sinus frontalis disease, deserves mention. In common with similar processes of the ethmoidal cells it is subject to great variation. At times it is present and again it disappears entirely. In most exceptional cases only, in which perforation under the periosteum takes place behind the orbital margin and insertion of the orbital fasciae and medial ligament and the dissecting trails push backward towards the apex of the orbit, is dislocation of the eye a necessary effect and exophthalmos a conspicuous symptom.

The successful treatment of sinus-lesions is almost exclusively surgical. In acute cases, of course, the clinical picture is so unmistakeable that there can be little or no question except to open the sinus and relieve

it as speedily as possible. In chronic suppuration of the frontal sinus, if spontaneous discharge has taken place into the nose along the natural channels or a fistulous tract has forced an opening externally or into the adjacent cells of the ethmoid or even into the maxillary sinus, the indications for operation are many. Such chronic lesions may manifest themselves by (1) indefinite or absent clinical features, with or without the history of an antecedent nasal lesion (2) the presence of a transitory swelling of the overlying soft parts and bone, which has been recurrent but which because of absence of pain is not regarded with apprehension by patient or surgeon; (3) transitory swelling of this region with unmistakable peri or hyper-ostosis with or without pain, as in syphilitic subjects; (4) recurrent neuralgia of excessive intensity and duration dependent probably upon mysterious impulses originating in the sinus (5) the growth of osteophytes or exostosis.

In former years, frequent attempts were made to effect drainage and establish communication with the nose by forcing a passage through, or re-establishing the closed or occluded fronto-nasal canal. It is not difficult to recognize that the internal operation (either by probe, irrigation-canule or by puncture of the floor of the sinus) presents many difficulties and disadvantages. In the first place, as has been established recently, it frequently happens that there is no naso-frontal canal or no communication with the nose, or, on the other hand, a communication with the anterior ethmoidal cells is present. In addition to this, anatomic and physiologic variations of size, direction and location of the nasal canal or the existing ostia are so common, and pathologic alterations are so numerous and misleading, that the possibility of establishing successful communication has been disputed by many operators and even when it is said to have been accomplished, the result has usually been of questionable value. Moreover, autopsical and clinical evidences \* are conclu-

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\*Luc and Jansen found frontal empyema almost invariably associated with the same disease in the anterior ethmoidal cells. "Zuckerkindl with an enormous experience, never observed a case of suppuration in the frontal sinus uncomplicated by ethmoidal disease. E. Fraenkel performed 146 autopsies and did not find a single uncomplicated frontal empyema." (Quoted by Lothrop.)

sive that it is among the rarest occurrences to find an uncomplicated suppurative process of the sinus frontalis. In the vast majority of cases, the adjacent anterior ethmoidal cells are also invaded, the choked contents of the frontal sinus, owing to impenetrable occlusion of the fronto-nasal canal, having eroded the lateral or posterior wall and discharged into one or several of the adjacent cells of the ethmoid. It is admitted that the anterior ethmoidal cells on account of their location and the danger of complications, are almost inaccessible to intra-nasal interference, while the cells generally affected in sinus disease (those adjacent to and along the floor of the frontal sinus) are altogether out of the reach of successful intra-nasal surgery. So that, even where the anatomic and pathologic hindrances are not insurmountable, the internal operation is generally productive of little or no good, and, is in addition, unsurgical and dangerous.

The surgical methods which enable us to explore the sinus frontalis from without for diagnosis and successful treatment are, at present, so satisfactory that few surgeons attempt drainage or exploration through the intra-nasal opening. Many surgeons have long since abandoned the internal operation as uncertain and unsatisfactory and resort almost exclusively to the external one. Trephines and dental drills are preferred by some surgeons, but the simplicity and ease of the manipulation of chisel, gouge and mallet, entitle these instruments to the preference. Even if spontaneous rupture has taken place as evidenced by fistulae in or near the region of the inner canthus, the opening of the sinus should first be made and subsequently the fistulous tracts can be incised, curetted or obliterated. Because of the deep burrowing of the pus and its final discharge through a cutaneous opening, the track is under the tear-sac and careless interference may result in greater harm.

A free incision is made within, or even a little above, the eyebrow. This follows the arch of the upper bony margin and is carried to the median line on the nose and extended downwards to a point a little below the inner canthus. Frequently, in order to have an unobstructed field, a second incision is made, at right angles to the

first and over the supposed site of the sinus. The skin being held apart by retractors and the periosteum being pushed aside, with the aid of drill, or by careful chiseling, an opening is made which permits examination of the sinus. At this point, we have frequent opportunities to notice the greatest aberration so far as thickening and thinning of the bone is concerned, anomalous conditions in which individual and constitutional peculiarities play an important role.

If there are pertinent reasons for more extensive interference, for instance, if the sinus is choked with granulation-tissue, pus, or other pyogenic products, it is freely opened. The sinus being thoroughly explored and exposed, this is followed, if indicated, by an exploration of the adjacent ethmoidal cells. If no further indication of disease is found, an attempt should always be made to re-open communication with the nose through the natural channels. This is not always possible and if not easily accomplished had better be abandoned.

If no further exploration of the adjacent sinuses is deemed necessary, this terminates the operation and the subsequent treatment is like that of any other bone-cavity; packing with iodoform gauze and maintaining a free opening which subsequently is permitted to close or is closed by attempts at plastic surgery.



## XI.

### THE HYGIENIC AND GENERAL TREATMENT OF ATROPHIC RHINITIS.\*

BY THOMAS R. FRENCH, M. D.

BROOKLYN, N. Y.

If by the word hygienic, as it applies to this subject, is meant the science which is concerned with the injurious effects of certain occupations then I should have but few words to say, for little can be done for patients with atrophic catarrh caused by the fumes of chemicals in certain trades if the occupation is continued. If the word is to be defined as that which is good for the health, the whole subject of treatment would be mine for elaboration. As, however, the consideration of the electric, mechanical and drug treatment has been assigned to others, it might be presumed that the definition intended to apply to hygienic is that which remains to be said after all is spoken, on the principle of the miracle in the parable of the loaves and the fishes. With that in mind as the possible meaning of the word in this connection, I will endeavor to enlarge the crum left over from this feast into a double proposition, namely: How to cleanse and how not to cleanse the nasal passages and naso-pharynx in atrophic rhinitis.

While there is considerable divergence of opinion regarding the etiology and pathology of atrophic rhinitis there is a general uniformity of method, differing only in detail, which is now employed the world over for the control of this disease, or by which it can be made bearable. The two main indications in the treatment of all cases of atrophic rhinitis are local cleansing and stimulation and, when fetor exists, a third indication is present; that of destroying the disagreeable odor. How best to cleanse the nasal cavities; how best to stimulate the sluggish glands and what

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\*Read before the Laryngological Section of the New York Academy of Medicine, March 28, 1900.

agents are best adapted to destroy the fetor, represents all that is now sought for in the local treatment of the affection under consideration.

The best results are unquestionably obtained in private practice, for the higher the patient is in the social scale the better he can, as a rule, be controlled, for the higher the degree of intelligence of the patient the greater his capacity for comprehending the need of treatment and, therefore, of responding to advice. In childhood comparatively little can be done, except with exceedingly tractable children, for enforced local treatment in childhood not only endangers the morale of the child but is not likely to be thorough. In old age we can hope for nothing better than to contribute comfort, for there is no hope of reviving the activity of the glands. It is in youth and middle age that most can be accomplished.

We all, no doubt, make use of the douche and postnasal syringe in cleansing the nasal cavities and postnasal space, and in the severe form of this disease nothing short of such means is capable of dislodging the hardened and tenacious secretions in the nose. The fairly normal nasopharynx is far from being clean, and it is difficult to conceive of anything more unclean than this locality in the fetid form of atrophic rhinitis, but the ordinary syringe as now made may fall only a little short of the nose, in this disease, in the matter of uncleanness. From two unclean things it is as impossible to make one clean thing as it is to make a right from two wrongs. The leather plunger of the instrument is soaked in oil when the syringe is made and we have no knowledge that care is ever taken in preparing the oil, and even if care should be taken the oil would soon become rancid and form an excellent breeding ground for microorganisms. A few weeks ago I took from a drawer in the throat department of a dispensary in this city, one of a number of hard rubber post nasal syringes in use in that clinic. It had probably been used several hundred times. To the eye when taken from the drawer it looked perfectly clean. The physicians who used it invariably cleansed it by drawing an antiseptic solution into it before and after its use upon a patient. The outside of the nozzle was always washed in water which runs from the pipe in that room at a temperature of from 170 to 190

degrees F. It, therefore, received what is supposed to be sufficient care, and in a superficial way it was clean. I sent it to Dr. J. M. Van Cott, Professor of Pathology in the Long Island College Hospital, and asked him, if possible, to make cultures from scrapings from the inside of the barrel and curved tube and also from the leather plunger. Dr. Van Cott's report of the result of his bacteriologic examination of the interior of the syringe is as follows:

"After carefully sterilizing the outside of the nozzle I drew into the chamber of the syringe about two drachms of sterile bouillon, and after a few minutes returned it to the test tube. In forty-eight hours the bouillon had broken down and emitted a mildly foul odor. It was then injected into the peritoneal cavity of a guinea pig, under the usual regulations in laboratory practice, with the result that in eighteen hours the pig died. During the period between the inoculation and the death of the pig he was under constant observation and presented the typical respiratory and nervous phenomena of the septic condition. The autopsy revealed marked congestion at the point of inoculation, mild general peritoneal hyperemia with localized disseminated peritonitis and considerable clear serum in the peritoneal cavity. Cultures from the serum and the right heart blood revealed a mixed growth of organisms which morphologically were identical. There were present a short bacillus not unlike the colon bacillus and a micrococcus. The latter I am inclined to regard as the cause of the pig's demise. These findings seem to me to prove that this particular syringe contained pathologic germs capable of killing guinea pigs and other of a saprophytic nature."

For many years I have had a suspicion that rubber and metal syringes with leather plungers were not clean, and, as ordinarily constructed, could not be made clean. The hard rubber syringe cannot be boiled, as boiling water will warp the barrel and cause the leather plunger to swell, and antiseptic solutions, if strong enough to destroy microorganisms, will soon destroy the leather plunger. The revelation made by the bacteriologist in the examination just described has proven that the ordinary syringe as now made is a menace to the health of the patient, and

should never be used. May we not hope that the day is not far distant when the same condition will be required of all syringes which is now required of the hypodermic syringe; that it can be readily and perfectly cleansed? As solid metal plungers make the instrument very heavy, I have had a postnasal syringe made of thin metal and an asbestos plunger. This instrument can be boiled and is, therefore, a perfectly safe one to use if prepared by boiling.

In the milder cases of a atropic catarrh, I much prefer that the patient should make use of a coarse spray in cleansing the nose. In such cases it answers the purpose quite as well as the douche, requires less fluid to affect the purpose and is less likely to occasion mischief in the middle ear.

I may, perhaps, be permitted a word here in regard to the preparation of the atomizer for use in this disease as well as all other diseases of the nose and throat. From the workshop to those who make use of them, atomizers are subject to a considerable degree of handling. Such an instrument is not infrequently purchased, found wanting and returned to the retailer for exchange. That instrument may, therefore, be infected. Before being put in operation by the patient an atomizer should be prepared as we prepare an instrument for operation—that is by boiling—and thus place it beyond doubt. If the bottle and stem are boiled five minutes and the hand bulb and rubber tube one minute, the possibility of conveying infection is removed. Atomizers with metal stems are alone capable of being subjected to this method of cleansing.

It is not necessary, nor is it desirable, in cleansing the nose to use strong antiseptic solutions. The olfactory filaments are affected sooner or later in all cases of atrophic catarrh, unless the disease is arrested, but the loss of function is only hastened by the employment of antiseptic solution, in cleansing the nasal cavities. Alkaline solutions are better borne, more serviceable and less harmful.

Next to cleansing I presume that the treatment most commonly employed, both by the patient at his home and by the physician at his office, in this disease, is in the use of some medicated oily preparation injected into the nose

and fauces by means of the atomizer. Such oily solutions unquestionably give vast comfort to the patient, but unfortunately prolonged and uninterrupted use of them is apt to hasten the course of the disease. First, because they aid in destroying the activity of the secreting glands by preventing proper evaporation, second, because they tend to choke and block the mouths of the glands themselves, and third, because they prevent, to some degree, the serum of the blood from reaching the current of air. By keeping the mucous membrane covered with an oil simply lubricates it, affecting only the comfort of the patient for the time being but it is in no sense curative. Oils should, therefore, as a rule, be used sparingly and intermittently and should be applied only after thorough cleansing of the nose with a saline wash and that saline wash should be used before and after a spray of peroxid of hydrogen. This may be regarded as a cumbersome method of treatment for the patient, but it is, I believe, the ideal method in most cases. The use of oils may be omitted for several days at a time, in some cases, with beneficial results. It is difficult to sterilize an oil except by boiling, for microorganisms thrive in air bubbles and escape destruction by the antiseptic agent incorporated in the oil. In answer to a question regarding the effect of boiling various drugs in oil, the Benzoinal Company made a test and find that iodine, iodoform and aristol are decomposed by boiling. that carbolic acid, creosote, eucalyptol, menthol, camphor, thymol, salol and the oils of cubebes, pine needles and wintergreen are evaporated by repeated boiling. It is probable that very little evaporation occurs if the oil is boiled but once.

And now a word regarding the constitutional treatment of atrophic catarrh. Under this head may properly be mentioned the antitoxin treatment, for while it is used for its local effect it acts by its effect upon the blood. This treatment was suggested by Belfanti and della Vedova in 1896 because of the belief that the bacillus found in secretions from atrophic rhinitis were an attenuated form of the diphtheritic bacillus. This method of treatment has had many strong advocates, but it has been abandoned by some of the foremost among them and we have no encouraging statements upon which to base a belief in its efficacy. In

a letter received from Mygind of Copenhagen a few days ago he states, regarding the antitoxin treatment in atrophic rhinitis, that he considers it the most effective method we possess but it has so many drawbacks that for the present, at least, he has been obliged to abandon it.

It is safe to say that one fifth of the subjects of this disease are not in good health and, therefore, require constitutional treatment. When this affection is dependent upon a constitutional dyscrasia, such as tuberculosis or anemia or upon an inherited taint, local treatment, while very necessary, should occupy a secondary position, for its action will be but transient unless the constitutional condition is combatted with every reasonable means for increasing body nourishment. The immediate effect of a change of climate upon the nasal symptoms is more marked at the sea-shore than inland, but it does not follow that a residence at the sea-shore will in the long run be more beneficial, especially if the dyscrasia is of a tuberculous character. A climate adapted to the constitutional condition is more important than one which agrees best with the local pathologic condition. The prolonged administration of various tonics such as iron, iodine, arsenic and cod liver oil will often be needed. In this class of cases I have, at times, employed injections of the various oils with most satisfactory results.

The subjects of atrophic catarrh, because of their susceptibility to acute inflammatory disorders of the mucous membrane of the upper respiratory tract, should live much out of doors and take baths in cold water followed by frictions. They should, of course, be properly clad in suitable undergarments, but now that the material known as linen mesh is obtainable it does not follow that wool should be recommended. Those with whom I have spoken who wear this material for underwear seem less liable to cold catching than when they wore wool, probably because of the peculiar drying quality of the goods. The main, and so far as I know the only, disadvantage it has is its high price.

While atrophic rhinitis is often spoken of as the bane of rhinologic practice we, nevertheless, have reason to congratulate ourselves upon the advance made in the method of treatment in the past fifteen or twenty years. In former times the subjects of the fetid form of this affection were practically ostracised from society; their very presence was a pollution. To-day if they cannot always be cured the fetid character of the secretions can be so controlled that the subjects of the disease may pass unnoticed by others.

## XII.

### A CASE OF RHINOSCLEROMA, OCCURRING IN A RUSSIAN IN THE UNITED STATES.\*

BY WALTER J. FREEMAN, M. D.,

PHILADELPHIA.

I am glad to have the opportunity of showing you to-day a case of rhinoscleroma, a disease rarely seen in this country and never in a native of the United States. It is found chiefly among the lower classes of Russia and Austria, and the patients found elsewhere can usually be traced to these countries. In Central America, however, up to 1895, twenty-three cases were reported, most of them occurring in natives of the country. Sporadic cases have also been found in Switzerland, Italy, India, Egypt and South America, and several cases (all foreigners) have been reported in England and France. Previous to the present patient, who has never been examined before and is consequently not a "repeater" only about half a dozen cases have been reported in North America. Juffinger, in his comprehensive treatise upon the disease, notes fifty-three cases in Austria and twenty-one in Russia; while Mackenzie, in 1880, mentions forty cases reported up to that time. Thus in spite of the wider attention drawn to it, Juffinger, in a period of twelve years, could only double the number of cases reported, and I have no doubt many of these were reported several times as they traveled around from place to place seeking relief.

The disease was first described by Hebra, in 1870, and, as he found its usual seat to be the integument surrounding the openings of the nose, and as it was a sclerosing process, he gave it the name of "rhinoscleroma." He considered it primarily a skin affection, and even as late

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as 1893, Buckley, in Burnett's "System," classified it among the skin diseases of the nose. It frequently, however, takes its starting point from the interior of the respiratory tract, even as far down as the trachea, and for this reason, the name "rhinoscleroma" is not, perhaps, scientifically exact. The name "scleroma" has been proposed and frequently used, but we already have the word "scleroma" in dermatology, and I think the use of terms so closely resembling each other would be unnecessarily confusing. In certain cases it might be better to adopt the German method and speak of "rhinoscleroma," "pharyngoscleroma" and "laryngoscleroma," according to its location, but the term "rhinoscleroma" has become so identified with it, and expresses its usual point of invasion so clearly, that, in my opinion, it is best to adhere to it.

While Cornil first discovered encapsulated bacilli in the tissue, Frisch, in 1882, was the first to recognize the presence of bacilli within the cells, and they are now generally looked upon as the cause of the disease, and their presence in the cells considered diagnostic. Stephanow even claims to have reproduced the disease in animals by inoculation. Certain spheroidal cells, first recognized by Mikulicz, which have undergone colloid change and lost their nuclei, are of great diagnostic importance. Rindfleisch has also described this peculiar cell-metamorphosis, whereby the exudate cells increase greatly in size, lose their granular appearance and finally cease to take a nuclear stain. Though they are also found at times in polyp and adenoid tissue, their presence in a sclerosing process constitutes a distinctive pathologic product of the disease. Although the bacilli may be found in any part of the tissue and in the secretions, they are more abundant in the recently affected parts, and especially in the Mikulicz cell which they sometimes fill to bursting. The bacillus closely resembles the pneumo-bacillus described by Friedländer and also that of Löwenberg found in ozena, and, while Paltauf does not consider them identical, he regards them as nearly related. It is a short, thick bacillus, usually encapsulated, and, though it looks like the Friedländer bacillus, it takes the Gram stain, which the latter does not, and also acts differently in certain culture media. That its action in animals is less virulent than that of the pneumo-bacillus is not, I think, of



much practical importance. Alvarez made the curious discovery that the fermentation of the indigofera plant was produced by a bacillus closely resembling that of rhinoscleroma, and he was even able to reproduce the fermentation by the Frisch bacillus. While the disease is apparently confined to the "great unwashed," its occurrence in two brothers in Switzerland at the same time is interesting as suggesting the possibility of its being contagious. Though it has been seen in a person as young as fourteen years, it is usually confined to vigorous adult life.

Beginning with a round-cell infiltration, the cells later become spindle shape, and finally organize into connective tissue and undergo sclerosis. The surrounding parts are slowly involved and marked contraction follows the course of the disease. When it attacks the mucous membrane, there may be considerable tumefaction of the mucosa or merely a general flat induration, in which case it is in the submucous layer. In the skin, it takes the form of a general infiltration or of nodules or plaques covered with normal epithelium. Stephanow, in a post-mortem, found that the disease showed a predilection for the narrower parts of the nose, throat and larynx, and especially those parts where the pavement epithelium passed into the ciliated variety; thus the disease usually made its first appearance at the entrance of the nose, or at the choanae, or below the cords. He claims that it does not spread by continuity of tissue, but that each part is attacked separately. It seems, however, that while in certain cases this is correct, one can plainly see in others that the disease progresses from one part to another by simple extension.

The tissues involved present a hard, almost ivory-like consistency. Indeed, Kaposi found cartilage and Chiari even traces of ossification in some of their cases. At the beginning, however, the parts have a soft, often velvety, feel, are smooth and shining, and may be normal or slightly reddish in color. Blood vessels are usually seen radiating from the masses, and they later undergo change and appear as white, scarlike rays.

Beginning at the anterior nares, the disease may spread to the lips and, involving the mouth, reach to the soft palate and fauces. Or it may extend over the face and attack the eyelids producing marked contraction. At

the same time, it progresses into the interior of the nose, involving the turbinals and spreading onward to the rhinopharynx, where the mouths of the Eustachian tubes are included in the scarring process. When the soft palate becomes involved, the rhino-pharynx may be shut off from view or even closed entirely, and the uvula disappears entirely or is drawn upward into the vault, and looks as if destroyed by ulceration. While ulcerations are seen on rare occasions, it is only when the disease takes the tumor form, and then they are very superficial and heal quickly. Even after operations, which are characterized by free bleeding, the wounds heal quickly without appreciable scarring. Fissures and cracks in the folds of skin and mucous membrane are more common, and as they become covered with crusts from the drying exudate, they often give the appearance of ulcerations. At present times the tongue is drawn up by contraction of the pillars and tissues of the fauces and it is difficult or even utterly impossible to examine the throat. Indeed we may have ankylosis of the jaws produced by the extensive contraction. When the larynx is affected, the subglottic swelling is more marked than in any other form of hypertrophic laryngitis, and it is now asserted that Störck's blennorrhœa is really nothing more than rhinoscleroma. The secretion is very tough, forms crusts and produces very severe cough, and dyspnea, which may terminate fatally.

The disease seems to be preceded by a chronic catarrh of the parts somewhat resembling atrophy. As it progresses through the nasal fossae, it leaves a track of scar tissue and on this are deposited crusts which give rise to a fetid odor. Juffinger has described the odor as eminently characteristic, and claims to be able to diagnose the disease by this symptom alone. It is noticeable even when it occurs in the larynx, and is present in our patient, though his is only the nasal form. I would especially ask you to notice the difference between this and the odor in ozena.

Although its painlessness, hardness, and slow growth are valuable points in diagnosis, it is not easy at all stages to distinguish this disease from tuberculosis, syphilis, sarcoma, lupus, leprosy, keloid and epithelioma. In the stage where there is nodular thickening of the skin, it may

closely resemble the tubercles in true tuberculosis, but there is more tendency to break down into ulceration in the tubercular disease, and bacteriologic examination will also help to clear up the diagnosis. To distinguish it from syphilis at certain stages without microscopic examination is more difficult, and for a long time it was considered one of the many manifestations of that disease. The symmetrical occurrence is common in rhinoscleroma, whereas in the tertiary form of syphilis this is rare. We have in rhinoscleroma a process in which there is no loss of substance and in which there are usually found the stages of infiltration, tumor formation, scarring and contraction going on in the neighboring parts at the same time. There is also absence of pain, as ulcerative processes are most uncommon, the lymphatic glands are not involved, and the induration is movable. Also, unlike syphilis, it progresses slowly and constitutional treatment has hitherto proved of little avail. The primary cellular infiltration may render it difficult to distinguish it from the round-cell sarcoma, but the presence of the scleroma bacillus and the characteristic cells will prevent mistake. From lupus and leprosy it can usually be distinguished by recalling the features of the disease already given. The microscopic examination will settle the diagnosis in doubtful cases. While the appearance resembles that of keloid, the favorite seat of the latter on the chest and the lobe of the ears is of diagnostic importance. Its progress and history as well as the microscopic examination will enable one to make a positive diagnosis. From epithelioma it may be distinguished by its freedom from bleeding and ulceration, and its smooth shiny surface, also by its tendency to contract and by the sluggishness of its growth.

The symptoms necessarily depend entirely on the course of the disease and the parts involved. It is not dangerous to life except as it involves the throat and lower respiratory passages. Sight, hearing, and nasal respiration may all be impaired and yet the patient suffer no pain. Difficulty in swallowing, hoarseness and cough are distressing when the throat or larynx are involved.

So far no specific remedy has been discovered, though the iodids, mercury, tuberculin and arsenic have all been given a thorough trial. Caustics and antiseptics have

also proved unavailing. The disease has a limited course and ceases if left to itself, but its course may be very long, twenty years or more, and is accompanied by much serious contraction and obstruction of important passages. Pawlowski, of Kiew, has seemingly obtained relief in several cases by the injection of the rhinosclerine extract obtained from the culture of the scleroma bacillus. As these injections are accompanied by fever and by swelling of the affected parts, he claims this procedure is also of diagnostic value. Injections of arsenic have been tried by many with varied results, some claiming great benefit and others asserting that it was useless. It is a tedious as well as a painful method, and few will submit to it for a sufficient length of time. Then, too, it cannot be carried out in all cases on account of the inaccessibility of the part affected. Salicylate of soda by injection and local application has seemed to benefit a patient of Lang's, and Bosworth reports a case treated by Doutrelpont where the disease was cured by applications of a 1% ointment of corrosive sublimate in lanoline. Some justifiable doubts are expressed whether this was not really a case of syphilis. The removal of the nodules does not prevent their return, but on the other hand does not increase the activity of the growth. Laryngotomy has repeatedly been done on the same patient at long intervals and the recurring growths removed, often with many years of comfort in between. Indeed, the hypertrophic tissue *must* be removed when it interferes with breathing. Péan reports a case in which he thoroughly removed all the diseased structures and cauterized any part where there was a tendency to return and in this radical way the disease was completely cured. When the disease affects the nose or larynx, more or less permanent relief may be obtained by dilation, for the pressure causes absorption of the indurations. It has been found that streptococcus of erysipelas is antagonistic to that of rhinoscleroma, so that the simultaneous injection of both into an animal is without result. It has been suggested on this account to make use of the antitoxin of erysipelas to combat the disease. For the crusts which occur in the larynx, producing severe cough and dyspnea, Schrötter recommends steam inhalations of a stimulating character. His tubes seem better adapted

for dilating the contractions in the larynx and I have used them in Vienna with seeming great relief to the patient. After the tube is introduced, the patient remains for half an hour or more holding it in place, and it is astonishing to see how well it is borne. Schmidt has reported a case in which the disease disappeared after an attack of typhoid.

The case before you is a man, whom I first saw in January of this year. He is thirty-four years of age and a native of Russia, and has been in this country for the past seven years. He first noticed trouble with his nose three years ago, and came to us at the Polyclinic Dispensary only because his nose was obstructed. He has had some greenish discharges from both nares and considerable dryness, but complains of no other symptoms. He has had no headache, no cough, no ear trouble and his general health is excellent. The examination showed both vestibules contracted and blocked by a fibrous growth of great density, which rendered the parts peculiarly stiff and unyielding. Only the merest traces of apertures into the nose remained and the septum seemed greatly twisted and deformed. In the right vestibule was a pedunculated fibroma, which was removed for microscopic examination. Its removal gave considerable comfort to the patient, as it increased the breath space to about  $1\frac{1}{16}$  of an inch. His uvula was congested and relaxed, and the post-pharyngeal wall was covered with inspissated mucus, whether as a result of the mouth breathing or from the usual forerunning catarrh I could not determine. The choanae were about half the normal size, showing that the process had extended to the rhino-pharynx. The lingual tonsil was large and red and the cords rough and hyperaemic. The trachea was coated with dark inspissated secretion. The odor from the case was curiously penetrating and unlike that of ozena, having a rather sickening, sweetish character. The piece removed was handed to Dr. Thos. S. Kirkbride, Jr., with the suggestion that it was probably a case of rhinoscleroma. His report confirmed my suspicions, in that he found numbers of bacilli of rhinoscleroma in addition to the usual histological elements characteristic of the disease.

### XIII.

## A CASE OF MASTOID DISEASE, WITH NECROSIS AND SEQUESTRUM OF THE PETROUS PORTION OF THE TEMPORAL BONE.

### OPERATION.—RECOVERY.

BY HAROLD WILSON, M. D.,

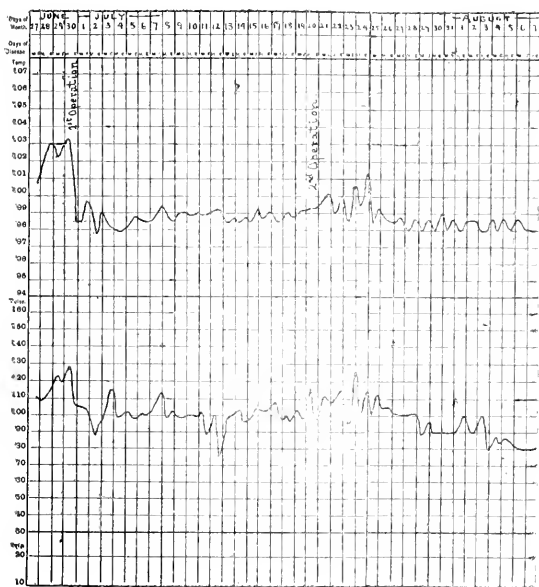
DETROIT, MICH.

The following case presents some features both unusual and interesting:

Edith R. aet. 20, consulted me Oct. 6, 1896 for a chronic otorrhea affecting the right ear and dating a year or so back, which treatment up to that time had failed to relieve. My records of the case at this time are imperfect, but from the history and condition of the case. I advised her to submit to a radical operation. This she refused, and ceased her visits. About three years latter, June 27, 1899, she was admitted to the Grace Hospital in the service of Dr. D. A. McLachlan, suffering from severe pain in and about the right ear, which was discharging profuse quantities of an offensive pus. The tissues over the mastoid and down the neck were swollen and tender, and there was a fluctuating swelling in front of the sternomastoid muscle, about two inches below the mastoid tip. There was marked right-sided facial paralysis. Temperature was  $100.8^{\circ}$  rapidly rising, (see chart), pulse 110. The patient gave a history of having had a continual otorrhea for three or four years, with occasional acute attacks of mastoid pain and tenderness. The facial paralysis had also existed during nearly this entire time. Her general health had been otherwise good. Her family history was bad. Her father died from dropsy; mother from tuberculosis, and one sister from cancer.

On the evening of July 19th, the patient came under my care. An examination of the patient and her chart showed that an operation had been made June 30th, by

the surgeon then in charge, consisting of an incision over the mastoid and down along the anterior border of the sterno-mastoid muscle, about three-quarters of an inch behind the auricle, and extending about  $2\frac{1}{2}$  inches above, and the same distance below the mastoid tip, evacuating the abscess in the neck. With a conical drill, a shallow, superficial excavation had been made upon the surface of the mastoid cortex, one-eighth to one-sixteenth of an inch in depth, at a point about on a level with the



center of the auditory meatus, and about one and three-eighths of an inch behind it. The abscess of the neck was discharging through the open wound along the border of the sterno-mastoid muscle about 2 in. below the mastoid tip. There was a profuse offensive discharge from the middle ear through the meatus, and examination showed a large granulating or polypoid mass filling the bottom of the canal.

The following day, July 20th, the patient was anaesthetized, and assisted by Drs. C. F. Sterling and E. Amberg, and the house-staff of the hospital, I made the following operation:

After cleansing and shaving the mastoid and peri-

mastoid area. an incision was made about three-eighths of an inch posterior to the line of the base of the auricle and parallel with it, from a point somewhat above the auricle, to the mastoid tip. Pushing back the periosteum, the posterior wall of the bony canal and the mastoid cortex lying over the antrum were removed by means of chisel and gouge, the bone being very dense and difficult to chip away. After the antrum had been reached, a considerable portion of the entire mastoid cortex was removed, forming a large conical opening in the bone. The antrum was small and rather obscure, and no accumulations of pus were found elsewhere in the mastoid. Upon examining the site of the middle ear, it was found to be filled with a large, firm, movable body, the surface of which was covered with granulations and bathed in pus. All attempts to remove this body with forceps or curette, using as much force as was deemed safe, failed, apparently because it was too large to be withdrawn through the bony wound. It was then grasped with strong forceps having long slender jaws, and after several efforts, crushed into several fragments. These were removed with comparative ease, and after being cleansed, *were found to make up practically the entire labyrinthine portion of the temporal bone.* The accompanying illustration shows the fragments that were secured, one of considerable size having fallen upon the floor during the operation was crushed under foot. The cavity left after the removal of the sequestrum, was very large, measuring  $1\frac{5}{8}$  in. from the posterior border of the bony wound, inward and forward, and about  $1\frac{1}{2}$ — $\frac{5}{8}$  in. in height and depth medialward. I could not determine with certainty whether the inner walls of the cavity were bony or membranous, since they were covered with granulations which it seemed very unwise to disturb with a probe or curette. It was therefore gently irrigated with 1 5000 sublimate solution, dusted with iodoform-boracic acid powder and packed lightly with gauze. The external wound was then dressed in the same fashion. The cartilaginous portion of the external auditory canal was not split, nor stitched, ample drainage and access to the wound cavity being afforded without this procedure.

Following the operation, the patient entered upon a normal and uninterrupted recovery. The abscess in the



neck, which had heretofore discharged continuously, ceased doing so at once, and at this writing, (January 18th, 1900) the operative wound has healed and there is no discharge from the ear. A small passage, about  $\frac{3}{32}$  in. in diameter, the walls of which are apparently covered with epithelium, leads to the healed internal cavity from a point about  $\frac{3}{8}$  in. back of the auricle and on a level with the upper wall of the external auditory canal.

*Remarks.* I have neither the opportunity nor leisure to make an exhaustive search of aural literature to determine how frequently cases of this kind have been reported, but believe them to be uncommon. It is rather surprising that in this case there should have been no cerebral infection, since the suppurating mass in the ear must have been separated from the brain by a very thin partition wall. If the protective granulations filling the cavity from which the sequestrum was removed had been broken down by the curette or by other forcible means, it seems to me that such infection would certainly have followed the operation. The operation to which the patient submitted previous to coming under my care evidently relieved some of the septic conditions (probably arising from the abscess in the neck), but obviously fell short of fulfilling the existing surgical indications. The facial paralysis has naturally not been affected by the operation or the subsidence of the otorrhea, since a large part of the Fallopian canal was included in the sequestrum so that the enclosed nerve was destroyed. I am unable to affirm with certainty by what route pus passed from the necrotic cavity into the tissues of the neck, but it seems very probable that it may have done so through the Fallopian canal. The temperature chart may be of some interest, as also the photograph of the fragments of the sequestrum, for which I am indebted to Dr. P. M. Hickey.

#### XIV.

### PYOGENIC INFLAMMATION OF THE MASTOID, AND ITS RATIONAL TREATMENT.\*

BY. J. H. WOODWARD, B. S., M. D.,

NEW YORK CITY.

Pyogenic disease of the mastoid antrum and cells always occurs in conjunction with suppurative inflammation in the tympanum. It may be either an acute or a chronic process. And both the acute and chronic types may present the characteristics of a relapsing inflammation. I suspect that it is a habit with most of us to regard suppurative disease of the middle ear as especially an affection of the tympanum, which at times is complicated by involvement of the mastoid antrum and cells in the same inflammatory process. To my mind, it is inconceivable that either an acute or a chronic inflammation, whether pyogenic or not, should be limited to the drum. It is not to be supposed that the tympanum may be invaded by a suppurative inflammation, while the antrum, lying adjacent, and having the same vascular supply and the same innervation, and a lining membrane of the same nature, escapes unscathed. I am convinced that the mastoid antrum is involved in every important suppuration in the tympanum, and that the mastoid cells are much more commonly invaded than we are accustomed to believe. *V* priori reasoning indicates that these considerations ought to be true. A posteriori demonstration has proved that they were true in the cases that I have been permitted to observe. The more intense the invasion of the drum, the more intense will be the involvement of the antrum and the cells. Important encroachments upon the integrity of the antrum may be expected in every purulent invasion of the tympanum, occurring in cases of scarlet fever, diphtheria and influenza.

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\*Read before the New York Medical Union, April 24th, 1900.

The tendency to await the development of so-called positive symptoms before concluding that the structures of the mastoid process have been attacked, is inherent in all of us. Those who are familiar with these cases, however, must agree that pyogenic disease in the mastoid antrum of a dangerous type is not always accompanied by either subjective or objective signs that would necessarily attract the attention of even an expert general practitioner. No other testimony as to the insidious nature of some of these cases is required than that of the unexpected occurrence of fatal intra-cranial complications in middle ear suppurations. Even in the common cases of subperiosteal mastoid abscess, it is evident that the disease in the antrum must have antedated the external appearance of the pyogenic infection by a measurable period. A considerable number of cases of acute purulent otitis media terminate in a state of chronic otorrhea; and a certain percentage have a relapsing tendency. In contrast with these various types that pursue an unfavorable course, we are able to cite examples of acute purulent otitis media in which complete and permanent recovery has taken place. It is my impression that complete and permanent recovery of an important acute purulent otitis media does not occur very often, unless more radical means have been adopted than those pertaining to the commonly advised local treatment. Whether this impression be true or false, it is evident, nevertheless, that in a considerable number of acute cases we have been puzzled, hitherto, in our endeavors to choose the proper time for resorting to radical operative interference. It is also true that we have not appreciated the importance of performing that operation upon the majority of our cases of chronic purulent middle ear disease.

You will pardon me, I am sure, for dwelling upon this phase of the subject, especially when you reflect that upon the answer to the question "when shall we operate in purulent otitis media?" depends the prophylaxis of those formidable intra-cranial and intra-venous invasions of otitic origin, which have engaged our attention so frequently in recent times.

Every one who has operated early in acute cases must have been surprised to find that the infection had extended so deeply in the short period of its existence. Every one

who has critically examined the chambers of the ear in the various stages of chronic purulent otitis media must be convinced of two things: (1) The doubtful probability that advanced disease may be controlled by treatment through the external auditory canal; and (2) The eminent desirability of a permanent eradication of the infective inflammation.

Otorrhea should be regarded as the most potent and persistent sign of pyogenic infection of the chambers of the middle ear. Experience demonstrates that if we wish to prevent the spread of infection from the middle ear, the conditions upon which the otorrhea depends must be removed. After extension of the infection has occurred, it is generally agreed that operative interference should be undertaken. Also, when swelling with fluctuation develops behind the auricle, no physician would object to an operation. But, in the absence of those reasons for operating, which even the uninstructed are able to appreciate, it is customary to recommend palliative measures, rather than resort to means which will remove permanently the foci of infection. Although in a certain limited number of cases, simple means will succeed, it is not good judgment, nevertheless, to favor a prolonged trial of non-operative treatment which is not yielding palpable results.

In a paper which I read before the New York County Medical Association recently, I discussed seven objective conditions that are as readily discoverable by the general practitioner as by the otologist, which are trustworthy indications for early radical operative interference in the management of otorrhoea.

They are as follows:

- (1.) Bulging of Shrapnell's membrane, with swelling at the inner extremity of the external auditory canal.
- (2.) Persistent tenderness over the mastoid process.
- (3.) Swelling of the soft parts over the mastoid process.
- (4.) Granulations and fistulæ in the auditory canal external to the membrana tympani.
- (5.) Persistent and relapsing fistulæ behind the auricle.
- (6.) Persistent, and especially offensive otorrhea.
- (7.) Sudden marked diminution, or absolute cessation of a chronic otorrhea.

I will add one other, which is partly objective and partly subjective, namely: (8.) Chills, and a septic temperature, preceded, or accompanied by severe pain in the mastoid process, or its vicinity.

I shall limit myself, at this time, to a brief commentary upon three of these propositions.

(a.) Whenever, in purulent otitis media Shrapnell's membrane bulges into the auditory canal, and especially if swelling at the inner extremity of that canal be associated with it, we may assume that the mastoid antrum is seriously involved, and that the radical operation will probably be necessary to the patient's recovery. It is generally agreed that a free incision should be made through the drum-head in every case. Too great faith may be based upon that treatment. The pus is always thick and tenacious, and it may not flow readily even through a large aperture. Retention of pus in the ear cannot be regarded too seriously; and, whenever incision of the drum-head fails to establish efficient drainage, it is more prudent to open the mastoid antrum at once, rather than subject the patient to the dangers of delay. Those dangers are especially great in diphtheria, scarlet fever and influenza.

(b.) The mastoid antrum should be opened in suppuration of the ear, whenever swelling of the tissues over the mastoid process is observed. In a certain percentage of cases, incision and drainage of the superficial abscess are followed by recovery. This fact makes it less easy to convince an important body of general practitioners that it is not sufficiently effective. Ten years ago, I was willing to treat certain cases in that way. Some of the patients were restored to health after a longer or shorter period; but, in a number of them, the radical operation had to be performed before the patient could recover. Among those cases of imperfect primary operation was one in which the sequel was disastrous; for my patient developed a cerebellar abscess from which he perished. The intra-cranial complication did not arise until nearly two years after the first operation; but it is certain that if a radical operation had been done in the beginning, he would not have died as he did.

Mastoid abscesses are a consequence of infection spreading from the antrum and cells. In order that the infec-

tious agent may reach the periosteum, the intervening bone need not be carious; for it may pass to the exterior by way of the veins and pores in the bone, and by the masto-squamous suture. When an aperture through the external table of the mastoid is found, it should never be assumed that that will prove sufficient. And when the external table appears to be in good condition, it should never be imagined that a thorough operation may be safely omitted.

Swelling of the soft parts over the mastoid process is also an indication for early operation. Such swelling may be dissipated in certain instances, by non-operative means, but it is not probable that the infective agent may be driven from the field in that way. It is especially important that the radical operation be made early in cases of chronic suppuration of the ear with swelling over the mastoid. Subsidence of the swelling in such cases can never signify that an adequate impression has been made upon the disease, unless the improvements have been brought about by measures that are distinctly more effective than the usual local treatment.

Sudden diminution or absolute cessation of a chronic otorrhea and the occurrence of chills associated with a septic temperature, which has been preceded or is accompanied by severe pain in the mastoid region, are symptoms of great significance. They should be regarded as signals that the disease is about to attack a more vulnerable part, or that systemic infection has already taken place. Operative interference should not be delayed; and, in such cases, the sigmoid sinus ought always to be explored.

It is evident that my conception of a rational treatment for pyogenic inflammation of the antrum and cells of the mastoid is a thorough exposure of those cavities and a complete removal of the diseased structures by operation. It is admitted that some cases will and do recover without this interference. I believe that they comprise a minority of the moderately severe cases only. Even for them, it may be maintained with considerable reason that the shortest, the safest, and the surest way to a cure is by the mastoid operation.

You will permit me to remind you, I trust, that the ob-

ject of the radical mastoid operation is not to drain the chambers of the middle ear, as some physicians would fain imagine. The object of the operation is to remove the disease! You would not expect to cure an endometritis or a carious focus in one of the long bones by drainage alone. Much less should any one presume to suppose that pyogenic disease of the middle ear, which combines the characteristics of both those affections, may be eradicated by operative means that are less radical than those which all are agreed should be employed in the cure of them. The pathologic process must be pursued into every recess that it has invaded. The antrum and the cells of the mastoid must be exposed in every instance as a routine procedure. This may be done with safety if we follow the anatomic lines laid down by Macewen, in his classic treatise on the "Pyogenic Diseases of the Brain and Spinal Cord," and in his "Atlas of Head Sections."

The dangers of mastoid operation have been grossly exaggerated. Irregularities in the anatomy of that region have been supposed to be common enough to endanger the patient's life during the operation, or the integrity of the important closely adjacent parts. That supposition is a purely fanciful one! It is true that the operator may wander from the course which he should follow, but it is futile to ascribe the error to an alleged anatomic peculiarity of the patient. Moreover, throughout the entire management of the case, until healing is absolutely complete, the most rigid antiseptic precautions are essential. It is very difficult to establish an antiseptic state of the invaded region in pyogenic disease of the middle ear. And, for that reason, I think one ought to be even absurdly particular in attempting to disinfect every part to which the infective germs may have penetrated. Such efforts should not be relaxed until the wound has healed perfectly, and there is no discharge from the ear.

It is necessary to attack the disease in the tympanum, as well as in the antrum and cells. Not only should we cut away all diseased mucous membrane and carious bone in the antrum and cells of the mastoid process; but we ought also to curette very thoroughly the lining of the tympanum; and the malleus and the incus should be removed whenever they are in a state of caries. Sufficient

bone must be cut away to give the operator an opportunity to ascertain the precise condition of the various parts to be examined. In this manner only may we succeed in doing justice to these cases. Objections may be raised that such radical invasion of the middle ear will prove disastrous to its function. So far as may be compatible with the well-being of the patient, I agree that the integrity of the ear should be conserved. But the handling which is here advised for the tympanum, however rough it may appear to be, does not necessarily injure the hearing. Furthermore, whenever the ossicles are so diseased that they must be removed, we shall find that the function of the ear had been destroyed some time before the operation was undertaken. I have curetted the tympanum in every case upon which I have performed the mastoid operation, during the past six or seven years, comprising in all a considerable number of such operations. And I have demonstrated to my own satisfaction, at least, that the most thorough use of the curette in the chambers of the middle ear is not incompatible, in these cases, with the preservation of acute hearing. I give the following history of a case upon which I performed that operation twice within the year, to illustrate this contention.

Henry W., 14 years of age, was seen in consultation with Dr. R. N. Disbrow, on Feb. 21st, 1899. During the two years preceding, he had had recurrent attacks of sup-puration in his left ear. The discharge had ceased each time after a little, and had never been accompanied by much pain. On Feb. 12th, the discharge recurred again, and the ear was painful. On the 19th, he consulted his physician. On the 20th, he had a chill, and his temperature rose to 104. I saw him in the afternoon of the next day. There was some purulent discharge from the left ear; the external auditory canal was free; there was a small perforation of the drum-head, and marked bulging of Shrapnell's membrane. There was no swelling over the mastoid process, nor was there tenderness, excepting over the knee of the sigmoid sinus. The internal jugular was not involved. Mental hebetude and photophobia were well marked. The patient was chloroformed, and I made a free incision through the membrana tympani, but did not evacuate much pus. After the incision, there was a



transient, well-marked spasm of the left side of his face, especially about the lips. On Feb. 22nd, assisted by Drs. Disbrow and Booth, and Dr. E. M. Alger, I opened the mastoid antrum, which contained pus and fungous granulations. The tympanum was thoroughly curetted. While curetting the aditus, twitching of the left side of the face was noted once. Following up the disease, I opened the sigmoid groove at the knee, and evacuated about two drachms of foul-smelling pus.

Ophthalmic examination immediately prior to the operation showed the media clear and the fundus normal in each eye.

I did not see this patient again until Oct. 27th, 1899, when his father brought him to my office, having already visited the Eye and Ear Infirmary, where he had been told that another operation was necessary. I found the ear discharging pus; and there was a fistulous opening at the upper end of the mastoid scar leading down to the antrum. The wound had never healed.

On Oct. 30th, at the Metropolitan Throat Hospital, assisted by Dr. C. J. Strong and Dr. John Drew, and in the presence of Dr. E. M. Alger and others, I operated upon this patient again. The antrum was full of granulation tissue and cholesteatomatous masses. The tympanum was in a similar condition. Every vestige of disease was cleared away, and, in order to accomplish that end, the tympanum and the antrum were thoroughly curetted. The only invasion of bone discovered was a small spot of caries in the lower portion of the mastoid process.

On Nov. 2nd, I redressed the wound, and removed a large adenoid from his throat. On Dec. 2nd, all dressings were permanently removed. There was a large polypus projecting from an aperture in the drum-head. By Dec. 6th, the last vestige of the polypus had been destroyed. About Dec. 29th, he was discharged cured. There had been no discharge from the ear since the polypus had been exterminated. The hearing in his left ear, the tympanum of which had been curetted twice within a twelve-month, was normal, or, for my watch 30/30.

In conclusion I must remind you of the importance of certain affections of the nose and throat as predisposing causes of purulent otitis media, their influence in exciting

relapses, and their potency in prolonging a chronic otorrhea, notwithstanding the local treatment almost universally advised. Indeed, I am not sure that relapses even after the most radical and painstaking mastoid operation would not occur, if those conditions in the upper respiratory tract were not removed. In the first place, we must recognize the importance of lymphoid hyperplasia in the naso-pharynx as a predisposing cause of acute and relapsing purulent otitis media. Attention has been directed to this matter by numerous writers; but the lesson has not been learned, even by many who are pretentious of being known as specialists in Otology. Among close observers, there can be no doubt that, in patients under fifteen years of age, an adenoid exists in almost every case of suppuration of the ear. To have any etiologic bearing, however, it must promote a chronic congestion of the naso-pharynx. But, in order to serve that purpose, the growth need not be very large, although the greater the adenoid, the more likely will it be to cause trouble in the ears.

Associated with adenoid growths, we commonly encounter an hypertrophy of the faucial tonsils. At the same time, an hypertrophic rhinitis, in which chronic dilation of the submucous veins of the inferior turbinal body plays the chief role, is the prevailing obstruction in the nasal passages. Posterior turbinal hypertrophies likewise obstruct respiration through the nose, and they too should be enumerated among the causes predisposing to purulent otitis media. Rectification of these abnormal states of the nose and throat is indispensable to the successful treatment of the conditions to which I have directed your attention to-night.

58 West 40th Street.

## XV.

### SOME OBSERVATIONS ON THE PROGNOSIS AND TREATMENT IN THE SO-CALLED CATARRHAL DEAFNESS.\*

BY DUNBAR ROY, A. B. M. D.

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AND AURIST TO GRADY HOSPITAL; FELLOW OF THE AMERICAN  
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SOCIETY, etc.

It seems superfluous in me to try to discuss the subject of deafness when our medical journals and programs of annual and monthly meetings teem with so many aural dissertations. And on the other hand I must confess that I bring before you no startling discovery nor miraculous cure, nor will I even present any rare pathologic specimen. My only excuse for trespassing upon your time with such an hackneyed subject is purely from the fact that my clinical experience has impressed upon me certain truths which cannot always be found in textbooks and which have not been given that degree of prominence which they deserve. There is probably no portion of medicine which opens up a broader or more inviting field to the quack and charlatan than is embraced under the dual word "catarrhal deafness." Deaf people are like drowning men, and a straw to such is always filled with restoring grace.

Barnum never uttered a greater truth than when he said "the American people like to be humbugged," and I have often thought that he must have had in his mind deaf American people.

Deafness is a general term and but signifies a specific condition of the aural apparatus without designating the particular portion of the apparatus which is involved. Certain pathologic conditions existing in any of the three divisions of the ear—external, middle and internal—will

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\* Read before the Georgia Medical Association, Apr. 20th, 1900.

produce deafness and the question of diagnosis and consequent prognosis rests upon which portion is involved.

Routine or problematical treatment of any pathologic condition should not be a habit possessed by any scientific physician. Because text-books lay down certain treatments in certain diseases is no reason why the physician should always follow such teachings. Cause and effect are closely correlated and the successful physician is he who studies closely the relationship of every accompanying sign and symptom. You may look around and note the successful consultant and you will find a man who studies minutely every case just as if he had never seen a similar one before. This principle, enunciated in general, is still more applicable to him who undertakes to treat successfully aural diseases.

Much advancement has made in the last few years in aural surgery especially that of the mastoid, but with this exception we have not made any wonderful strides since Wilde and Toynbee published their work some fifty years ago. This statement will probably be strenuously denied by many specialists of the present day but such is made after a close perusal of an old book on "Diseases of the Ear" by Joseph Toynbee, F. R. S., published in London in 1860. With the exception of better illustrations as exemplified by the printers art and leaving out the operative treatment of the mastoid and the failure to recognize adenoid vegetations as a causal factor in middle troubles, this old book of Mr. Toynbee's is as clear exposition of aural diseases as can be found in any of the text-books of the present day. It is a good deal clearer exposition of the subject than the majority of the modern text-books, in that the author gives results obtained from personal investigation and experience. The plates in this book of anatomic and pathologic ear specimens are all taken from his own dissections and every portion of the temporal bone is beautifully represented. It is a pleasure and a profit to peruse the pages of this old book and in doing so I have gained much valuable information. The arrangement and classification are different from the more modern works and yet there is a logical sequence which appeals to the student. No subject is discussed without its being followed by illustrative cases from practice, a

happy feature of any text-book, and it is surprising to find the treatment therein contained quite similar to much that is used to-day.

During the last few years there has been too much of a tendency especially among specialists, to publish text-books and manuals, showing their own names on the title page when frequently and in fact most often the whole work is nothing more than a compilation of the subject from older authors. I have never thought that such enhances the reputation of its author and certainly adds nothing to our present knowledge.

Deafness due to some pathologic lesion of the external ear such as obstructions are as a rule easily recognized by the experienced otologist and likewise easily remedied. It is in diseased conditions of the middle and internal ear that deafness arising therefrom gives us the most trouble.

Physiologic experiments and anatomic dissections must as yet be the chief factors in furnishing us with knowledge concerning the internal ear and a basis upon which to form a diagnosis when that organ is diseased. It is true that comparative tests, as for instance with the tuning forks, have given us much valuable information in reaching a diagnosis but the experienced clinician will have to admit that even these tests are by no means positive. Leaving out of consideration the treatment of internal ear lesions as a cause of deafness, for when such has been recognized during life the treatment is quite uniform among otologists, we wish to consider for a few moments the pathologic conditions of the middle ear which produce this symptom and what benefit may we expect from the various methods which have been proposed for its remedy. We would make a still further limitation by considering the deafness dependent upon a dry condition of the middle ear in contradistinction to that produced from otorrhea. In other words we will consider the deafness dependent upon the so-called "dry-catarrh of the middle ear."

Unless we recognize that even this dry catarrh presents two entirely different histo-pathologic conditions, our treatment can never be definite and it will be fortuitous should success attend our endeavors. In this day of quickly made specialists the public is made to suffer through their ignorance, for they treat all cases alike

being ignorant of the very first principles which are needed for the recognition of these pathologic states.

"A primrose by the river's brim,

"A yellow primrose was to him, and nothing more."

It is a plea for a more minute study of every case of deafness why this paper is brought before you to-day and to deprecate the habit of having a routine treatment for all cases. Bear in mind that I am not considering deafness dependent otorrhea but those cases where the drum is intact and the middle ear is not open to ocular inspection. Clinical experience has taught me that the prognosis in these cases is dependent upon:—

1. Age of the patient.
2. The pathologic condition of the nose and nasopharynx.
3. Duration of the deafness.
4. Condition of the eustachian tube.
5. Mobility of the drum and ossicles.
6. The general health of the patient.

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1. Age of the patient. All experienced otologists must agree that deafness in the young dependent upon a catarrhal condition of the middle ear is much more successfully treated than when it occurs in adult and the very old. In fact my own experience teaches me that success in treatment is in direct ratio to the age of the patient. This is accounted for in two ways, (a) the duration of the deafness is naturally longer the older the patient is, and (b) nasal and naso-pharyngeal lesions occur more frequently in the young and as a rule are more amenable to treatment. One great reason why the prognosis of deafness in the young is so favorable is due to the frequency of the presence of adenoids and enlarged faucial tonsils, by the removal of which there is nearly always a marked improvement in the deafness.

2. The pathologic condition of the nose and nasopharynx.

The prognosis for catarrhal deafness is always more favorable when there exists distinct morbid conditions in the above parts which can be removed through appropriate treatment. The fact that the mucous lining of the middle ear and eustachian tube is continuous with that

from the nasal cavities and naso-pharynx readily accounts for the causal dependence between the two. Stenosis of the nasal chambers from all causes, naso-pharyngeal catarrh from adenoids or the remnants of such, are conditions frequently found which exert a baneful influence upon the functions of the middle ear. If they exist and can be removed the prognosis for the deafness is certainly more favorable although such conditions are not always a *propter hoc*. I believe however that too much importance has been attached to such morbid conditions as mentioned above and thus the prognosis has often been more sanguine than it would otherwise have been. I would not have you think that I underestimate the close relationship existing between catarrhal deafness of the middle ear and the pathologic conditions just mentioned but that such are the whole cause when they exist, as some would have us believe, I would never admit. There is some undiscovered reason for deafness, look at it as we may, and until we do discover it we shall not be able to tell why one patient who has a perfectly normal throat and nose is a sufferer with deafness and the man whose nasal cavities and naso-pharynx are both diseased, goes through life untouched.

### 3 Duration of deafness.

This is self evident to the experienced otologist. The longer the pathologic conditions, which have aided in producing the deafness, have existed, the more marked is their influence on the tissues and consequently the more difficult are they of removal.

### 4. Conditions of the eustachian tube.

For years this one organ of our body has been made to suffer for the sins of others. The idea that all catarrhal deafness is caused by a diseased condition of the eustachian tube, especially that of stenosis, is as deep rooted in the minds of many physicians as is the Rock of Gibraltar.

That such is frequently the case all must admit, but that it is universally so is erroneous teaching. The habit of inflating every ear which comes to you for treatment is unscientific and sometimes injurious. While not so frequent yet undue patency of the eustachian tube may exist as well as stenosis. Experience has taught me some valuable lessons which can not always be found in books.

There are only two ways of examining the patency of the

eustachian tube: the first is by means of the catheter and auscultation tube, and the second is by means of bougies.

No conscientious otologist should ever inflate the middle ear without using the diagnostic tube, for the sensations of the patient are too unreliable to be depended upon. By the constant use of the auscultation tube and the same catheter one can soon learn to diagnose the condition of the lumen just as by auscultation the physician learns to diagnose the condition of the lungs and bronchial tubes. I say the same catheter, because if different ones be used with varying sized lumens, the sounds heard will also vary. The Politzer bag has been discarded for two reasons: (1) because it frequently blows mucus from the nose into the eustachian tube, and (2) because it is very difficult to keep clean. In chronic catarrhal deafness the medication of the tube and middle ear can only be satisfactorily accomplished by means of the catheter, if we wish to obtain the best results. To my mind there is but one kind of catheter to be used and that is one of pure silver which is capable of being bent and thus able to be made to fit the naso-pharynx of every patient. To pass properly this instrument requires some little knack, and when the physician finds that he does not possess this quality he had best use some other method of inflation rather than injure the mucous membrane. The slightest trace of blood following the use of this instrument indicates that it has been used improperly. With children it is best not to use the catheter and during the last few years I find that an apparatus like the multiple comminuter or globe nebulizer attached to a compressed air cylinder and used for inflation, accomplishes all that could be expected, and causes much less fear to these young individuals than any of the older methods.

##### 5. Mobility of the ossicles and drum.

Ankylosis and membranous adhesions in the middle ear prevent free motion of the ossicles when the drum is vibrated. As a rule adhesions are surmised when the drum is retracted. The mobility of the drum and secondarily that of the ossicles is best ascertained by means of Seigel's pneumatic speculum, which produces suction in the external canal and at the same time allows ocular inspection of the drum. When this instrument shows distinct im-



mobility of the head of the malleus and also the handle, and when only the free portion of the drum membrane moves backward and forward, the presumption is very strong that the ossicles are ankylosed or bound down with adhesions. My own experience teaches me that the prognosis is much more favorable when the ossicles and drum membrane move freely together under the same traction force.

#### 6. General health.

Just as in other organs so in case of the ear, a run down condition of the general system makes the prognosis more unfavorable. Especially is this the case when the patient is of a tubercular diathesis. Pronounced anemia and rheumatism in my experience are always unfavorable. The tuning fork tests I have not considered because in the first place the results obtained by them are relative and in the second place I have only considered those tests which are objective in character. The tuning fork in conjunction with other tests affords us frequently excellent information as to the seat of the pathologic process but I must say it has aided me very little in knowing what remedy to apply.

Prognosis dependent upon the ability to hear the tick of a watch is exceedingly unreliable and he who depends upon such will often come to grief. The human voice in different degrees of intensity has in my experience proven the most satisfactory test of all in determining the prognosis in any given case.

Passing now from the prognosis I wish to say a few words in regard to some points in the practical treatment of catarrhal deafness. The modern treatment is based upon the principle that the large majority of such cases owe their origin to some pathologic condition of the nasopharyngeal or nasal cavities. Within certain limitations this proposition is true, and yet the otologist who treats his cases with this all-pervading idea will often be sadly disappointed. Nasal stenosis is one of the most frequent exciting factors in catarrhal deafness, and yet marked cases of this condition are found where the ears are never affected. However, there is certainly a close relationship between the two. In catarrhal deafness the nasal passages should always be placed in as healthy condition as possible, but unless there is marked stenosis we need not

expect very brilliant results from that treatment alone. Adenoids in children are the most frequent cause of deafness in these young subjects. The removal of such is frequently followed by the most brilliant results, and always to the point of benefit. I would always urge the removal of adenoids at the earliest age possible before their evil effects have taken too firm a hold upon the subject. Such growths, in my experience, act not by direct mechanical obstruction of the eustachian tube, but indirectly by pressure and more especially by fostering a catarrhal condition of all the membranes in their neighborhood. Their presence causes a constant congestion and hyperplasia of the mucous membrane lining the eustachian tube just as a polypoid degeneration of the middle turbinate will cause an enlargement of the inferior turbinate through pressure stasis. In the adults, and even at all ages, the nasopharyngeal mucous membrane is sensitive and in the majority of cases needs soothing remedies, and the old idea of mopping at random this cavity with strong solutions of nitrate of silver is barbarous in character. Such applications may sometimes be necessary, but should be made by means of cotton on the end of a wire passed through a catheter. This latter requires some delicacy of touch, but when rightly applied often produces the most happy results. Stenosis of the eustachian tube, when due to swelling and hypertrophy of the mucous membrane, is best treated by applications direct to the membrane through the catheter thus medicating the cavity of the middle ear as well.

When there are distinct strictures of a fibrous character, whale-bone bougies are exceedingly valuable, but exceedingly harmful if the physician does not possess that *tactus eruditus*. Rapid dilatation by means of electrolysis with metallic bougies has not obtained for me those excellent results reported by Duel, of N. Y. I have tried this method in several cases, but with success no better than that obtained with the ordinary bougies. A precaution should be used of not inflating the ear after the use of bougies for fear of producing a local emphysema, as once occurred to me.

I am decidedly of the opinion that the injection of vapors into the middle is far inferior to the use of liquid

medicaments. Iodin and menthol in liquid albolene have yielded me the best results. Fischerich, of Wiesbaden, has reported a great improvement in deafness from the use of injections of 6 to 8 drops of a 2% solution of pilocarpin. I have also used an injection of liquid paraffin, as recommended by H. Burger, but have never seen any markedly favorable results therefrom.

Pneumatic massage of the drum when there is a decided retraction of this membrane with accompanying ankylosis of the ossicles from fibrous adhesions, has been receiving considerable attention during the last few years. In conjunction with other methods it has in some cases decided value but it is by no means a *sine qua non* as some would have us believe. If Siegel's speculum shows us that only the peripheral portion of the drum membrane moves and the malleus and incus remain fixed, we need not expect much benefit from this method of treatment. However if all the parts move together, daily massage will prove a very valuable adjunct to the other remedies. It is not necessary to have one of the expensive apparatus as I have found that Siegel's speculum does for me all that could be expected and has the advantage of allowing one to see just how much suction is being exerted. When the malleus is fixed and immobile, instrumental manipulation is the last resort.

To sum up the treatment in a few words I would say:

(1.) See that the nasal cavities and nasopharynx are placed in as healthy condition as possible by the treatment of all catarrhal states and the removal of all obstructions to free respiration.

(2.) See that the eustachian tube and middle ear are medicated at proper intervals in addition to the inflations.

(3.) Render the drum and ossicles as pliable as possible by some system of massage.

(4.) Don't forget the general health of the patient.

Such is an outline of treatment in catarrhal deafness and the prognosis is always a matter of uncertainty as to the amount of benefit to be received.

Grand Opera House Blk.

## XVI.

### HAY FEVER.

A. E. ABRAMS, M. D.,

HARTFORD, CONN.

I would state at the outset of this brief paper that I have no new theory to suggest and no especially new lines of treatment. It seems to me that the neurotic theory so fully satisfies all existing conditions found in hay fever that we do not need a new theory so much as a clearer conception of the underlying causes which predispose to the attacks and the exciting causes of which pollen, dust, various odors, uric acid, etc., are only a few of the more marked and better studied.

That hay fever occurs almost exclusively, I think I may say exclusively, in individuals of acquired or inherited neurotic temperament is a well established fact, and yet physicians, as well as patients, are still searching for a specific to a condition which can not always be cured by the same remedy or line of treatment any more than a prescribed course of diet and remedies would be applicable to all cases of neurasthenia. As I study the patients, with hay fever, who come to me from year to year, I am more confirmed in the belief that I am treating cases of neurasthenia with the addition of certain symptoms for which we have a special name. Hay fever is certainly a very unfortunate title but it is so firmly fixed in the minds of the laity that it will probably never be changed.

Most writers name a three fold basis in the etiology of the disease, viz.: A neurotic habit; a diseased condition of the nasal mucous membrane and an exciting cause, but I think we may safely say that unless the first be present we do not have hay fever. Why all persons of neurotic habit and irritable or diseased mucous membrane do not have hay fever when exposed fully to the exciting causes will never be explained any more than the reasons why

one person faints at the sight of blood and another does not, or why one woman becomes hysterical under conditions that do not in the least disturb her sister.

I have seen farmers working day after day in grain that was mixed with large quantities of the despised "rag weed" and yet a case of hay fever was unknown among them. Certainly it was not from lack of diseased nasal mucous membranes for that was the rule rather than the exception, and although the nasal secretions were greatly augmented while working under the conditions mentioned, they subsided very quickly when they came into a clearer atmosphere. The neurotic habit, however, is something they know nothing of and nervousness is to them a synonym for foolishness.

On the other hand I have seen a mechanic sixty years of age who had worked more than half his years in the same shop, lived in a crowded unsanitary part of the city and suffered from depressing influences of his domestic life, go into the country for a few days of rest during the haying season. After working in the lot one very hot day he developed severe symptoms of hay fever which persisted until frost came. The following year, although he remained in town, the disease came on in full force and he applied for treatment. Under regular treatment for two years he escaped the disease on the following year and has remained free since.

Here was a typical case where all the predisposing causes existed except some special irritant or influence which he found in the heat and dust of the hay field. Although he had at various time in previous years visited the same locality during the haying period he had never suffered before from the disease because his nervous system was in better condition and the chain of predisposing cause, therefore, was not complete.

#### TREATMENT.

Success in the treatment of hay fever does not depend so much, at the present time, upon the discovery of new remedies as upon the thorough and intelligent use of well known remedies and hygienic measures. Indeed it is a question primarily of obtaining the willing and complete cooperation of the patient for a period of time which in

many cases must be extended over years rather than weeks or months. Like the soldier of the regular army, in time of peace he may have little to do more than report at regular intervals or stand subject to call but he should be ready to report at the appointed time.

It is in some cases quite impossible to teach the patient that he is suffering from a disease for which there is yet no specific or to make him understand that he has not fulfilled his whole duty to himself or his physician if he simply seeks relief from the severe symptoms that occur during the height of the disease. During the past ten years I have treated a considerable number of cases of hay fever and the new cases almost invariably come to the office simply hoping to be temporarily relieved of the nasal obstruction, cough or asthma, or to be cured by some magic remedy that shall be prescribed. When the requirements of the case are fully set before them they will follow one of these courses:—

1. Decline treatment altogether.
2. Make a few office calls, obtain a measure of relief and drop out of sight altogether, or for at least a year.
3. Follow as nearly as possible such directions as you may give them and return at the appointed time each succeeding year. The last class, if they do not always obtain a complete cure certainly obtain sufficient relief to permit them to follow their avocations and spend less money than either of the other classes with grater satisfaction to themselves and attending physician.

I have several such patients who consult me at intervals from early May to October each year. They have thus been enabled to follow their regular work or remain at home throughout the hay fever period and the expence for treatment is but a small fraction of what they formerly lost in wages of business, or spent for a six weeks sojourn in the mountains.

As the time for the anticipated attacks approaches patients must be warned against all over-exitement or depressing influences. Irregular or insufficient hours of sleep, too much social life, excessive card playing, sexual excess, overwork, either mental or physical, or excessive use of alcohol or tobacco. Some of these patients are very near the borderline of insanity and the other mem-

bers of the household need to understand that they must be spared, as far as may be, the little annoyances of domestic life during the season when the disease prevails. One of my cases last August was made very much worse by the sudden illness of her sister, who was paying her a visit. At another time the departure of a son, who was expected to be absent for some months in a distant state, was sufficient to bring back all the symptoms in full force. Hope is a most helpful element in the treatment and we should give patients all the honest encouragement that the circumstances will permit. One lady, now under my care, was made very comfortable for two years by the mind cure. Here is a suggestion that we should not lose sight of. The positive assurance that she would be relieved enabled her to become less self-centered and much of the usual nervous tension was relieved.

As a tonic I have not found any medicine so generally useful as *nux vomica* or its alkaloid, strychnin. One of my patients has taken it for more than a year with great benefit. Quinin, hypophosphites and other tonics may be indicated but as in other diseases we must be guided by the general condition and idiosyncracies of the patient.

Opium is a dangerous remedy. Bromids have a very limited range of usefulness. In especially nervous cases I have found the common pill of camphor, hyoseyamus and valerian quite useful and not depressing. Heroin, the new remedy, promises to be an important addition to our means of allaying the accompanying cough or asthma. It is also an excellent aid in the treatment of gastro-intestinal irritation that some of these cases suffer from. The initial doses of heroin should be small, not over  $1/30$  of a grain every two to four hours at first. Many persons are very sensitive to it. One of my patients was almost stupefied from  $1/12$  grain doses repeated at intervals of four hours for one day. Occasionally it causes extreme nausea and vomiting. From a considerable experience with it I am sure it is a drug to which patients are not nearly as liable to become addicted as they are to opium, morphin or chloral, yet I would not be understood as advising its unguarded use.

My experience with the dried suprarenal gland extends over one year only, but I can fully agree with all the fav-

orable comments that have been made upon it. I am sure that all who do much nasal work would not be willing to be deprived of it. It so supplements the effects of cocain that all the unpleasant reaction and hemorrhage so likely to follow the use of that drug are perfectly overcome. It may be used by patients as a spray or local application without risk and certainly for the temporary relief from the nasal obstruction it is the best remedy yet discovered. To obtain the constitutional effects of the suprarenal gland I have usually found four tablets a day sufficient although more may safely be given. Cocain I never allow fever patients to use for themselves in any mixture or solution of any kind whatsoever. It is the most seductive drug in a physician's armamentarium. The depressing after effects of it are often very marked in persons of nervous temperament, even when used in moderate quantity as a local application. One of my patients, an elderly lady, was always made faint by using a few drops of a 2% solution in the eye. I found that I could not deceive her by using solutions of other substances.

All necessary operative work on the nose should be done before or after the hay fever season. I have entirely given up the use of the chemical or actual cautery during the disease. A weak solution of nitrate of silver, two to six per cent., is the strongest application that I now use and only that in select cases. Some patients are made very uncomfortable by even the weaker solution of this drug.

After trying most of the various applications and douches that have been from time to time recommended I am convinced that a mild alkaline cleansing solution thoroughly used, followed by a proper application of a saturated solution of suprarenal gland to contract the nasal membrane, supplemented by an astringent protective ointment gives the most satisfactory results. Patients get more protection from using a non-irritating ointment twice daily than from any form of nebulizer that I have tried. They soon learn to apply it very readily with an applicator and bit of absorbent cotton directly to the sensitive parts. For the irritation of the conjunctiva a 2% solution of nitrate of silver applied to the inverted lids every second or third day while the patient uses a solution of boric acid during the interval, generally suffices. In some cases a weak solution of



acetate of lead or a saturated solution of borax with ten per cent. of glycerite of tannin added are efficient and less irritating.

Briefly summed up my argument is:

1. The successful treatment of hay fever demands close attention to all the details regarding the patients habits of life, idiosyncrasies, diet etc., for a considerable period of time.

2. All surgical measures that may be necessary should be applied when the patient is not suffering from the disease.

3. Great caution must be exercised in the use of drugs that enthrall as hay fever patients are usually very sensitive to their action.

## XVII.

# THE TREATMENT OF PERITONSILLAR ABSCESS WITH EXHIBITION OF NEW IN- STRUMENTS.

BY NORVAL H. PIERCE, M. D.,

PROFESSOR OF OTOTOLOGY, POST-GRADUATE MEDICAL SCHOOL AND  
HOSPITAL; LARYNGOLOGIST AND OTOLOGIST TO THE  
MICHAEL REESE HOSPITAL AND EMERGENCY  
HOSPITAL; FELLOW OF THE CHI-  
CAGO ACADEMY OF MED-  
ICINE.

The object of this paper is to accentuate an important point, i. e., the proper place of incision in opening peritonsillar abscesses, and to exhibit instruments which enable us to successfully and safely meet the indication. It is surprising that this matter is neglected by nearly every French, German and American text-book on throat diseases.

Nothing is more annoying to both patient and surgeon than the attempt at reaching the pus of such an abscess proving futile. And nothing is more gratifying to both, than its successful evacuation, for not only are the distressing symptoms immediately relieved, but in the majority of cases the mere first incision is curative. This is true not only of advanced abscesses, but suppurating foci in this region at their very inception tend to heal when incised: so that early incision is not only justified but indicated. On the other hand, while nearly all peripharyngeal abscesses will rupture spontaneously after from six to sixteen days, they will not always do so. Examples are on record of gravity abscesses resulting, the pus dissecting its way to the sub-hyoid region about the esophagus, or to the posterior mediastinum, and pleural cavity. Cases of fatal erosion of the great vessels of the neck also have been recorded as well as of fatal pyemia from peritonsillar abscesses, the local characteristics of

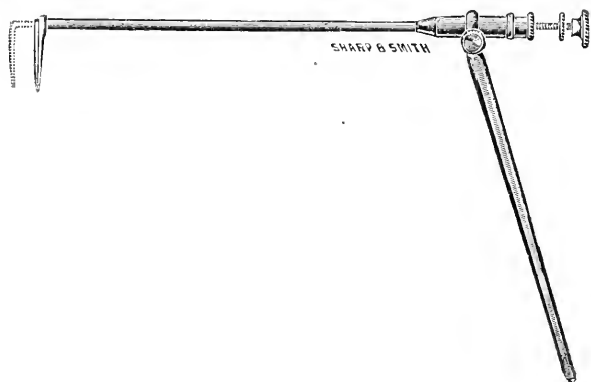
which were not alarming. We should therefore, never leave a peritonsillar abscess rupture spontaneously.

Where shall we incise? At what point will our incision be most likely to meet the smallest quantity of pus? Most authors recommend incision at the point where the most bulging seems to be. This is usually at the upper anterior surface of the anterior pillar, within a centimeter from its edge. That the bulging is not always due to pus pressure is proven by frequent disappointments after incision here. In many cases the bulging is due to edema, or it may be due to the tonsil itself being pressed downward and forward by the pus pressure. Suppuration within the tonsil proper is very rare. Chiari recommends as the best place for incision a point in the middle of a line drawn from the base of the uvula to the crown of upper wisdom tooth. But this point of incision is recommended for the purpose of avoiding the large vessels. It has no reference to the most likely situation of the abscess. That spontaneous rupture of such an abscess takes place through the anterior pillar cannot be questioned. They rupture through the posterior pillar too, but by far the most frequent place at which spontaneous rupture occurs is in the fossa supratonsillar which may be best seen by pulling out the tongue, depressing its dorsum with a spatula, pushing outward the opposite corner of the mouth and inclining the head to the opposite shoulder.

The fossa supratonsillar is situated between the anterior and posterior palatal arches and above the tonsils: its mouth or opening into the pharynx is somewhat triangular in shape its base being formed by the tonsil, its anterior and posterior border by the respective pillars of the fauces. It extends inwards and upwards and outwards into the soft palate, downwards and anteriorly between the tonsil and the plica triangularis and sends a prolongation downward a variable distance behind the tonsil. It is in this region that the suppurative process resulting in peritonsillar abscess takes place. Its mouth becomes occluded by swelling of the tonsil and mucosa of the pillars, occlusion occurs from fibrinous material being extruded on the surface of the tissues and the fossa becomes a closed cavity. The abscess may begin in the upper or palatal portion of the fossa; it may be in the anterior portion, between the

tonsil and the plica triangularis; it may be even in the portion behind the tonsil; wherever it is situated it may be, if not always, most frequently and most safely reached at a point below the junction of the anterior and posterior pillars, for at this point all the other portions converge.

For the purpose of opening abscesses in this place, I have had constructed two instruments, one a knife, the other a dissector. The blade of the knife is turned at right angles to the shaft and has cutting edges antero-posterior. This knife has been largely supplanted by the sharp pointed dissector. Both are introduced into the supratonsillar space in the direction outward slightly upward and backward. The ends of the dissector for one inch are curved at right angle to the body of the instrument. You will notice that they are grooved so that pus will escape as soon as it is found. When the abscess cavity is entered, the



branches of the dissector are opened thus greatly aiding the escape of pus and preventing the opening from immediately closing as is the case in simple incision. In cases where the pus is thick or ill-smelling, the cavity is carefully washed out with permanganate solution 1-500 with the accompanying instrument. The forceps points are sufficiently sharp to enter the soft supratonsillar tissue and yet not enough so as to wound a vessel with which they might come in contact. When, however, the external mucosa is too dense for the dissector the knife may be used to make the initial incision, then the other instrument is used as in blunt dissection.

In conclusion I would accentuate the importance of thorough evacuation of the abscess and irrigation. I am convinced that a number of cases of recurrent quinsy have been due to incomplete evacuation, a portion of the inflammatory material remaining, becoming more or less encysted and breaking forth anew whenever the elements necessary thereto present themselves.

## XVIII.

### AN INTERESTING CASE OF TUMOR OF THE THROAT.

BY E. HARRISON GRIFFIN, M. D.,

NEW YORK CITY.

LECTURER ON DISEASES OF THE NOSE AND THROAT IN THE NEW YORK UNIVERSITY AND BELLEVUE MEDICAL COLLEGE; ATTENDING SURGEON TO THE THROAT AND NOSE DEPARTMENT OF BELLEVUE HOSPITAL OUTDOOR POOR.

Mrs. X. a well nourished Bohemian woman about fifty-two, complained of tumor of the throat, which caused her a great deal of annoyance again and again.

She had been unable to sleep for a couple of nights as she had been told that an operation was imperative and must be undertaken at once, otherwise she was liable to choke to death.

An examination showed the larynx, the vault of the pharynx and buccal cavity normal. Examination of the nasal cavity showed a slight deflection of the septum towards the right side.

I treated her pharynx which showed a slight collection of mucous, with an astringent and told my patient not to worry over her condition, but to follow out my directions in full.

I prescribed a mild laxative and an ointment for her catarrhal condition and told her that perhaps later it might be necessary to operate on her nose.

She seemed very much relieved at my diagnosis of her case, but in the space of four days, she again paid me a visit and stated that the tumor was there again in her throat.

I now repeated my four examinations and found everything normal.

I sprayed the throat and nose and told her the tumor she complained of was nothing but a piece of phlegm and not to worry about it. Again I dismissed my case.

Three days afterward she again applied for treatment, stating that she could not sleep, eat or swallow anything as the tumor made its appearance in the throat now so she and her daughter could see it plainly. She was going to tear a piece of it out and show it to me.

Her physician had told her that the tumor could easily be removed as it was so high up.

He had seen it upon the patient's first visit and this was the reason he had sent the case to me.

I again started in to make my examinations.

I called the daughter to my side after I had depressed her mother's tongue and illuminating the buccal cavity asked her to point out the tumor to me.

At first her face was a blank, the tumor could not be seen, when suddenly her face beamed with pleasure; "There it is, doctor, there."

My spatula had now depressed the tongue well at its posterior portion and the lip of the epiglottis was well in view.

"There it is, doctor." She was pointing to the epiglottis. This she had desired me to tear out.

This is what a man with a large lucrative practice in New York City mistook for a tumor. Surely the specialist has a place in medicine.

112 West 45 St.

## SOCIETY PROCEEDINGS.

### THE AMERICAN LARYNGOLOGICAL ASSOCIATION.

*Twenty-Second Annual Meeting, Held at Washington, D. C. May 1, 2 and 3, 1900.*

*President's Address by* PRESIDENT SAMUEL JOHNSTON, M. D. (Baltimore).

After returning thanks to the members of the association for the honor conferred upon him, the president spoke of the future policy of the association. He believed that new members should be elected by a two-thirds affirmative vote of the entire membership. Old members should be encouraged to continue in active work. Scientific and clinical work should go hand-in-hand. One should avail himself of all possible advances in diagnostic ability—as, for instance, the determination of leucocytosis as an initial feature of malignant disease. More attention should be paid, in teaching students in rhinology and laryngology, to operative work on the cadaver. Members of the association were looked to as teachers, and consequently great care should be taken in the selection of new candidates. The aim should be not mere numerical strength, but skill in attainment. In the programmes of the future it might be well to limit the number of papers, but more attention should be given to discussion. The former should be grouped in two general classes, scientific and clinical. No opinion should go out from the meetings as official unless it was founded on facts. Mild measures, especially as concerned the use of the cautery, saw and trephine, should be strenuously urged. A committee of censors, to be elected annually, should be established which should pass on all matter to be published in the annual Transactions. In conclusion, a feeling tribute was paid to the memory of two active fellows who had died during the year—Dr. Max Thorner, of Cincinnati, and Dr. Joseph C. Mullhall, of St. Louis.

*Fractures of the Nose by* DR. T. A. DE BLOIS, (Boston).

He said that "broken" noses, so-called, were not, as a rule, really fractured. They were rather cases of bony displacement and dislocation. They might be classified according to the degree of injury and also according to the relation of the parts involved. There might be a dislocation (not fracture) of the nasal bones, *i. e.*, a solution of bony continuity, or there might be a fracture of the nasal process of the superior maxilla or of the zygoma. Injuries might also result during parturition or from nursing or sleeping, from the constant impact of the nose, delicate at this period, against the mammæ or the pillow. Then again there were the cases occurring from falls, blows and collisions. In the "upper-cut" blow of the boxer, there was injury to the septum, followed by swelling, possible abscess, and detachment from the subjacent parts. The "side" blow gave a double dislocation of the nasal bones. while in the direct "front" blow the internal nasal border was driven downward and outward. Treatment consisted in the reduction of the dislocation, which might require a general anesthetic. These flat noses might be properly manipulated so as to dispense with external apparatus. For an internal splint, a bit of stiff rubber tubing inserted by means of a closed pair of scissors (well greased so as to facilitate their withdrawal) might be of service. The elastic recoil of the rubber slowly acting will often force a dislocated nose into place. though some few days might be required to produce the full effect. Plaster of paris bandage made an excellent external splint. Illustrative clinical cases were then described.

Dr. De Blois also exhibited an illustration of an abnormality of the uvula which was double, one mass seeming to come from the anterior and the other from the posterior faucial arch. The former was amputated, leaving the latter appearing as a perfectly normal organ.

DR. EMIL MAYER (New York) inquired of Dr. De Blois if he had not found the rubber internal splint irritating to the nasal mucosa. He himself preferred to use gutta-percha, which could be accurately moulded to fit each individual case, and was less collapsible. Elongated forceps could be used for the replacement of recent cases.

Dr. De Blois replied that the rubber was to be retained only temporarily, until perfect reduction had been secured.



DR. W. E. CASSELBERRY (Chicago) recommended the use of a general anesthetic for perfect diagnosis and reduction. Deeper injuries were very painful, and in children without an anesthetic proper examination was impossible. He commended the external plaster of Paris dressing. The objection to all forms of special apparatus was that they were rarely at hand when wanted, and were difficult to keep in position. Plaster could be moulded over the nose, carried back to the line of the ears, being made thinner posteriorly, and secured by tapes passing above and below the ears behind the head. Such splints had to be worn ten days, and were, of course, a disfigurement. For internal splinting nasophen gauze applied under cocaine acted admirably. For fractures low down in the nose, the ordinary vulcanized tube answered very well.

DR. JONATHAN WRIGHT (Brooklyn) called attention to the statements found in the writings of the fathers of medicine respecting the treatment of nasal injuries. The fingers of a child, thongs attached to plugs on the concave side of the injury, etc., had all been advocated. In a recent case, one authority had inserted a plug made from the lung of a sheep. All the ancients objected to the use of absorbent material as rapidly tending to become foul.

DR. JOHN O. ROE (Rochester) commended the use of a thin metal splint externally with an internal dressing. An anesthetic should be given when the injury was at all severe. Adhesive plaster was an admirable retaining material.

DR. H. L. SWAIN (New Haven, Conn.) called attention to the mechanics of the nasal arch, saying that if one could bring the two nasal bones into proper approximation, they would support each other. If the patient could be seen frequently, he would dispense with all apparatus.

DR. F. C. COBB (Boston) had had as good results without as with apparatus. The behavior of the nose during the first two days after the receipt of the injury would determine whether or not apparatus might be safely dispensed with.

DR. W. K. SIMPSON (New York) advocated the use of the Bernays sponge specially shaped to fit the inside of the nose. It offered ideal requisites for this purpose, being easy of introduction and hemostatic by the equable pressure it exerted.

DR. W. F. CHAPPELL (New York) had used the sponges, attaching them by iodoform collodion to a thin plate of gutta-percha, a device which had, in his hands, proven of great value.

*Atrophic Rhinitis.*—read by DR. J. E. LOGAN (Kansas City, Mo.)

He reviewed the various theories of the pathology of this condition, condemning the introduction of the very large number of clinical terms which had been used to describe it. Four theories as to causation seemed worthy of special consideration: (1) hypertrophy, cutting off the blood supply by pressure, thus inducing atrophy; (2) suppurative rhinitis in children; (3) bacterial causation; (4) sinus disease. For himself, he was inclined to attach importance, on the basis of his own experience, to the last-named theory. He narrated the histories of several cases in which opening and curetting of the ethmoid cells cured the atrophic rhinitis. One unexplained fact in these cases was the real source of the immense amount of secretion.

DR. COBB had observed in his own ethmoid cases marked atrophy on the side of the sinus disease. In persistent sinus discharge he had noted a steadily increasing atrophy of the intranasal structures.

DR. WRIGHT stated that post-mortem examination did not show that close connection between atrophic rhinitis and sinus disease that had been claimed by Grünwald and others. In his own personal experience, the inferior and not the middle turbinate was the structure primarily attacked. The etiology of atrophy here was hard to determine. There was no analogous process in any other part of the body. He was inclined to attach much importance to the recent views of Cholera and Cordes, who looked upon the process as the result of a rarefying osteitis, commencing with a bony hypertrophy, the little canals in the bone containing an artery and vein becoming occluded by the bony growth. As a result the blood supply to the mucosa was shut off. How this process actually began was a matter of much less importance. Recent anthropometric investigations had confirmed Hopman's view as to the causative relation of a short antero-posterior nerve dimension, and still more strongly Fraenkel's contention

as to the special occurrence of the affection in the brachio-cephalic type of skull. This latter observation, however, might be referable only to certain geographical areas, especially in Germany and Switzerland, and not applicable to American patients. No one cause was alone applicable in every case. In his own experience, seventy-five per cent. of the cases had occurred in women, and the sexual life might be an important factor.

DR. SWAIN called attention to the fact that the rarefying osteitis had been marked as the cause of intra-nasal oedema and polyp formation, but he realized that intra-nasal conditions might differ in different types of skulls. The brachio-cephalic type of naris might cleanse itself with more difficulty than would other types.

DR. J. E. BOYLAN, of Cincinnati, inquired if Dr. Wright had ever seen patients spontaneously recover after the menopause.

DR. WRIGHT answered that he had noted a cessation of symptoms, while the objective atrophy remained.

DR. CASSELBERRY declared that we must not overlook the associated atrophy of adjacent parts; there was also an atrophy of the lymphoid structures, a non-sensitiveness of the parts, and either a lack of development or an early shrinkage of physiologically associated tissues. The bony walls of the sinuses were especially thin in these cases. All of these lesions strongly suggested to him the theory of a tropho-neurosis.

DR. SIMPSON had seen cases persisting beyond the menopause with as much virulence as before.

*Recurring Membranous Rhinitis Due to the Bacillus of Friedlander, With Report of a Case.* Read by DR. EMIL MAYER, (New York).

The clinical history of the case described was a later chapter of the case previously reported before the American Medical Association by Dr. McReynolds, of Dallas, Tex. After the case came under Dr. Mayer's observation exhaustive microscopical and bacteriological tests were made, proving to his own mind that the membranous formation was due to the bacillus of Friedländer. Some thirteen or more previous cases were on record and were carefully analyzed by Dr. Mayer, who gave a complete *résumé* of the literature of the subject.

At the close of the session Dr. Boylan exhibited a hypodermic syringe for the application of cocaine to the pharyngeal vault for adenoid operations.

DR. J. H. BRYAN, of Washington, showed an aseptic syringe for nose and ear work and improved drainage tubes for the frontal sinus; Dr. R. P. Lincoln, of New York, a wax model of a recurrent tonsillar tumor with illustrative plates; Dr. Mayer, a hollow intubation tube introducer for use in laryngeal stenosis, the intubation tube itself being retained by an arm screwed in through the tracheotomy incision.

DR. T. R. FRENCH, of Brooklyn, exhibited photographs of a chair to be used in the employment of the upright position in ether operations on the nose and throat.

## DISCUSSION.

### **The Early Diagnosis and Treatment of Laryngeal Cancer.**

The discussion was opened by DR. J. N. MACKENZIE, of Baltimore, who spoke on "Methods of Diagnosis and General Principles of Treatment." The speaker said he would confine his remarks to certain phases of the question which were at the present time more pressing and of immediate importance. Omitting the matter of a possible cancer bacillus, there were three methods of arriving at a diagnosis: (1) The naked-eye appearances combined with the clinical history; (2) thyrotomy, as affording a more complete inspection of the parts; (3) microscopic examination of a removed fragment. The second method was frequently a part of the first. The latter was the most practical of all, though we had unfortunately relegated it to a subordinate place. The removal of a fragment for examination generally so stimulated the malignant growth that it marked the beginning of the end. As to the clinical history no one solitary symptom was of unequivocal value. Many cases might be positively diagnosed by this first method. He asked whether, when reasonable doubt existed, a piece should be removed for microscopical examination. In the view of the speaker he should answer absolutely in the negative. Under the term thyrotomy, we might include even a more extensive division of the cervical tissues than mere laryngo-fissure. This

was allowable in cases of reasonable doubt or when there was failure to define the exact territory occupied by the disease. Even here it might be impossible to map out the whole of the affected area. There might be a diffuse infiltration difficult, if not impossible, to recognize fully. As to removal of a piece for microscopic investigation it must be said that the patients were at once exposed to the danger of auto-infection or of metastasis. There was also the danger of stimulation and rapid increase of the neoplastic area. The method was unsatisfactory, inconclusive, misleading and often impossible. As to the nature of the infectious element in cancer we were still in the dark. It might be a bacillus or inhere in some peculiar vital characteristic of the cancer cell. As to treatment, the time would probably come when the treatment of cancer would be not surgical but medical. An antitoxin would probably be discovered. At the present time the only safe procedure was the total extirpation through healthy tissue of the cancerous mass, together with complete ablation of the neighboring glands and lymph channels. Surgical methods in the past had been incomplete, and eradication had been only partial. It was indeed often difficult to determine the limits of disease, and the microscope would show infiltration in areas which to the eye appeared normal. There was often a diffuse infiltration or there might be a deep-seated epitheliomatous mass which only slowly approached the surface. If the disease approached the middle line, removal of tissue should be early and complete. Such operations should be undertaken only by surgeons of skill, and there should be the proper ethical relation between surgeon and patient, so that the latter should authorize the former to do whatever seemed most advisable. Under these circumstances the laryngologist must come to the aid of the general surgeon. The removal of the lymph structures in the area under consideration was one of the easiest dissections of major surgery. A low tracheotomy should be done. The chief danger was the recurrence of the disease in the cervical lymphatics. In cases seen very early, in which the growth was small and papillomatous in appearance, circumscribed, not in the median line, and not especially malignant looking, we might remove one half of the larynx. Sometimes growths

which seemed pathologically malignant were clinically benign. If there was no evidence of malignant infiltration in the pedicle, we might possibly be justified in removing simply the growth as it appeared without the more formidable operation. But even here there was doubt as to whether we had completely removed all the malignant deposit. As to removal of one-half of the larynx, the remainder was not of especial service so far as voice production was concerned. Intra-laryngeal operations in cases of extensive disease were to be condemned. Simple thyrotomy with curettage was not up-to-date surgery, and was a reversion of procedure to the status of fifty years ago. No operation could be assumed as correct which did not include the removal of the lymphatics. Success by partial removal might be explained by a mistake in diagnosis. Many adenomata had mistakenly been classified as true carcinoma.

*Methods of Treatment and the Statistical Results.*—By DR. D. BRYSON DELAVAN of New York.

He discussed the aspect of the question and exhibited elaborate statistical tables not included here. The speaker had made, seven years ago, an earnest plea for the full reporting of all cases, not only those which were successful, but those which were not. The tables presented were a careful compilation of one hundred and sixty-three cases occurring in the practice of some eight continental surgeons. No one had been included who had not had at least ten personal cases. This excluded all American operators. The current statistics on the subject were faulty because they were too promiscuous. The cases were confused and there was a resulting repetition. In some instances the patient had undergone more than one operation, and so appeared in more than one category. Finally in the published statistics there was no sharp line of demarcation between thyrotomy and partial resection. Out of the entire number of cases studied there had been only six per cent. of recoveries, that is, the patients were alive three years after operation.

*The Surgical Procedures*, by DR. J. SOLIS-COHEN, of Philadelphia.

He said that before undertaking operation permission should be secured from the patient to do whatever seemed necessary. If the mass was of such a shape that a section could be punched out through the whole thickness, thus allowing examination of the cut surface, this procedure was permissible. If the growth affected the vocal band, a thyrotomy might be done and a knife be employed to remove the circumscribed diseased area. Partial extirpation was not reliable. In the performance of laryngectomy he would call attention to the following points: (1) In order to prevent the entrance of septic matter into the lungs, we should operate with the head of the patient in a semi-inverted position. Some material might be aspirated into the lungs, but this happened with a tracheal tampon, for absolute protection with the latter device is impossible. (2) Preliminary tracheotomy should be done, otherwise we may be troubled by the descent of the trachea. (3) The epiglottis should be retained if possible. (4) We should shut off all communication of the mouth with the air passages. In attaching the upper part of the trachea to the skin, the tube should be slit longitudinally for a short distance. (5) All dressings should be avoided. No packing should be allowed, as it caused a constant desire to swallow. Feeding by enema should be done and no tube be used per os. (6) The larynx should be removed from below upward, and after operation the foot of the bed should be elevated. For the proper attitude towards the practical problems of these operations a combination of the laryngological and surgical minds was needed.

DR. J. C. RICE (New York) expressed the conviction that the laryngologist should not turn over these cases to the general surgeon until the diagnosis was positively established. It was difficult to make an early diagnosis. He believed in giving the iodids and carefully watching the progress of the case before advising operation.

DR. EMIL MEYER (New York) called attention to the fact that cases often diagnosticated as laryngeal cancer, showed the origin of the growth to be in the esophagus. He thought that there was a very decided limit to the extent of applicability of endo-laryngeal methods.

DR. W. K. SIMPSON (New York) could not advise total extirpation without a microscopic examination of a frag-

ment removed for this purpose. No one could always make a diagnosis from appearances alone. If the case came to us early and showed an isolated deposit, we might use endo-laryngeal methods. In one of his own cases thus treated the man was alive four years after operation. In view of his personal experience, he could not advise total extirpation.

*Secondary Hemorrhage after the Use of Suprarenal Extract.*—This paper was read by DR. F. E. HOPKINS (Springfield, Mass.)

He gave the histories of three cases of posterior exostoses of the septum in which the extract had been used, and in which secondary hemorrhage resulted. The object of the paper was to give the opinions of various clinicians to whom the author had written, as to the liability of hemorrhage under the conditions named. Almost all agreed that there was considerable danger, and that safety required the use of intranasal packing after the extract had been employed. In regard to the remedy causing coryza after having been sprayed into the nose, there seemed to be an idiosyncrasy in this respect, and it could not be determined beforehand just who would and who would not be benefited by this procedure.

DR. H. L. SWAIN stated that he had had more hemorrhage with cocaine and the extract combined than with either alone. It should be remembered that the latter acted on the muscular fibre of the arterioles and did not lead to the formation of any coagulum. Consequently when the vessel relaxed there was liability of bleeding.

DR. J. W. FARLOW (Boston) had had no hemorrhage with the extract and had seen some remarkable cures of coryza follow its use. Yet it might benefit a patient at one time and cause him much discomfort at another. This experience has recently been met with in one of his patients. He had succeeded in removing headaches from intranasal conditions, sometimes in a very remarkable way. The question arose in such cases, how long it was judicious or safe to continue the use of the remedy.

DR. A. W. WATSON (Philadelphia) had seen more hemorrhage with the use of the abstract than without. He thought that after its use patients should be kept in the



office for half an hour or so. Then if any dangerous degree of vascular relaxation occurred, they would be under direct control. He had seen acute coryza follow the intranasal use of the extract, and in his own person had had under these conditions what he believed to be a general acute sinusitis lasting ten days. He had thought that in the latter instance the solution might have become infected.

DR. SWAIN said that if the fresh glands could be obtained, it was possible to make a solution of their active principles in acetic acid, and that this solution might be put up in glass tubes and kept indefinitely.

*A case of Ozena of Probable Sphenoidal Origin.*—This paper was read by DR. J. W. FARLOW (Boston.)

His patient was a girl aged twenty-one years, with a crusty, odorous discharge from the left naris. There was considerable atrophy of the intranasal structures, but the discharge seemed to come definitely from the posterior portion of the naris. The probe seemed to pass into a cavity which was regarded as the sphenoidal sinus. Syringing with peroxide of hydrogen and an alkaline antiseptic, and later curetting, practically relieved all the symptoms.

DR. S. W. LANGMAID (Boston) remarked that the recent epidemic of influenza would probably cause much sinus disease. That it did produce much acute trouble was in accord with his own experience, for he had recently seen five acute cases in two weeks. If the influenza attack passed off quickly, trouble in the sinuses would not result, but if for any reason the latter became obstructed, inflammation would be very probable.

DR. A. W. WATSON believed that ozena could occur independently of atrophy, or there might be crusts without ozena. He was inclined to regard true ozena as due to sphenoid and posterior ethmoid disease. He preferred a very weak formalin solution for the irrigation of these upper and posterior regions.

DR. FARLOW, in closing the discussion, said that it was always advisable in looking at these cases to have the patient wait after the nose had been thoroughly cleared out, for then it would be possible to ascertain the exact site of discharge.

*Bullous Middle Turbinates.*—DR. J. PAYSON CLARK (Boston).

He reported two cases, both in woman, the prominent symptom being headache. The enlarged turbinates were removed without incident by the cold snare, with complete relief to symptoms.

*Cyst of the Larynx.*—DR. CLARK also read this paper. The mass was situated on the middle of the right vocal cord and from its hardness suggested a fibroma. The forceps slipped from its surface at the first attempt at removal, but it was cut with a laryngeal knife, when a fluid escaped showing degenerated epithelial cells and leucocytes. The firmness was probably due to the deep situation of the cyst in the substance of the cord.

DR. JONATHAN WRIGHT, regarding the first paper of Dr. Clark, said that he was inclined to doubt the statement which had been made that these bullous conditions were the result of development from fetal conditions and presented no inflammatory evidences. He had examined several of these masses and had found on the convex surface what appeared to be osteoblasts and on the concave what appeared to be osteoclasts. The former produced bone while the latter absorbed it. The conditions met with might be due to the unequal activity of the two classes of cells beneath the embryonal layer of mucosa. It was a striking fact that most of these cases occurred in women and after the establishment of puberty.

*Fibroma of the Larynx.*—This paper was read by DR. A. B. THRASHER, of Cincinnati.

The patient was a woman aged fifty-six years, who had complained of dyspnea and hoarseness. Her family history was negative. The posterior and lateral walls of the larynx seemed to be the seat of some deposit, so that the true cords appeared pushed in and were defective in abductor movement. A fragment of the mass was taken for examination. The report was fibroma. Iodid of potassium was given in increasing doses, but in a week the patient was seen again and was much worse. After a preliminary tracheotomy with the head dependent and gauze packing, the larynx was split,

and it was seen that there was a submucous hypertrophy extending down the cartilage. It appeared to be simply connective tissue. It was removed with forceps and the patient made a good recovery. The voice was now rough and hoarse, but audible. Two similar cases were described. The rarity of the case consisted in the extensive connective-tissue deposit.

*Singular Exhibitions of Partial Paralysis of the Vocal Cords due to Over-Use of the Telephone.*—DR. C. C. RICE, of New York.

He said that he would make its title a query, for he desired to obtain the consensus of opinion as to the possible effect of over-use of the telephone on the voice. He had had two cases. The first was a nervous man, aged forty-five years, who had been accustomed to use a desk transmitter with his head in a cramped position. The cords showed evidence of fatigue of the thyro-arytenoid muscles, and there was a loss of sustaining power in the other outer muscles, for the cords trembled and the arytenoid cartilages separated immediately after approximating for phonation. The man was directed to take a rest from business and to use the telephone with head erect so as to afford perfect freedom of the cervical muscles. Recovery had been only partial. The other case was that of a man who was stout and not at all nervous. On the right side of the larynx there was fair adduction. The edge was straight but there was a lack of tension, with an incomplete view of the cord, which was obscured by the overhanging and congested parts. By rest and the assuming of a proper attitude while using the telephone, this patient completely recovered.

DR. T. A. DEBLOIS opened the discussion by relating the case of a man whose head was violently bent forward as the result of a fall. As a result, a sudden strain was put upon the muscles of the neck, and he became hoarse from inability to approximate the cords.

DR. W. E. CASSELBEERY mentioned the case of a clergyman who was accustomed to become very much excited in his pulpit work, and gradually developed a similar condition to that seen in the case mentioned by Dr. Rice. Rest and the formation of the habit of more quiet speech greatly improved the condition.

*A Case of a Pin in the Larynx for Two Years; Removal by Endo-Laryngeal Methods.*—This paper was read by DR. A. W. DEROLDES, of New Orleans.

The patient was a young girl in whose larynx a pin was found situated on the posterior portion, having pierced the apex of the right arytenoid at its inner side. Its head was embedded more deeply on the right side just above the false cord. Forceps was applied, the left index finger being placed behind the larynx to steady it. The forceps slipped, but the finger caught the pin, which was thrown out of the mouth. In such cases, when the head of the pin was below, it might at first have passed some way down the trachea and then have been coughed upward so that the point engaged. Moreover, the head of the pin impeded its migration so that it did not move about in the tissues as a needle would. The Roentgen rays might often locate the pin when it was impossible to make out its exact position by the mirror. Another point of interest in this case was a hard swelling in the neck which was probably due to infection which had stopped short of suppuration.

*A Peculiar Case of Migratory Foreign Body with X-ray Illustrations.*—DR. D. BRADEN KYLE, of Philadelphia, read this paper.

The patient was a woman, who constantly complained of a feeling as if a foreign body was moving about under the scalp. She suffered from intense neuralgias, which at times seemed to focus in the mastoid, and at other times in the ethmoid or antral regions. In one of these latter attacks there had been a discharge of purulent material from the naris and in the discharge was a piece of a needle. The symptoms continuing, it was concluded that still another piece was somewhere in the tissues, and an x-ray picture was made, showing a dark line in the neighborhood of the antrum, though it was impossible to tell whether the body was actually in the antrum or on the bone corresponding to one of its walls. The antrum was opened and its cavity illuminated, but nothing was found. In a short time a gumboil formed which discharged, giving escape to another piece of the needle. From this time all symptoms disappeared.

DR. S. W. LANGMAID called attention to the fact that

attempts at swallowing often caused great changes in the location of foreign bodies in the upper air tract.

DR. W. K. SIMPSON commended the trial of forceps and other instruments upon material similar to the foreign body before actually attempting the removal of the latter. He found sharp forceps better than merely roughened blades.

DR. KYLE closed the discussion. He stated that the patient had suffered from an *x*-ray burn, and remarked that the time of the exposure causing the burn was not so long as the exposure on previous occasions when no burn had resulted.

*Tracheal Injections in the Treatment of Pulmonary Tuberculosis.*—This paper was read by DR. T. MORRIS MURRAY, of Washington.

He gave a short history of the development of this procedure, and then mentioned his personal experience with thirteen cases of pulmonary tuberculosis. In all there was at first a slight explosive cough, but in all the general effect on the cough had been good. No spasm had been noted. The solution used consisted of thyme and eucalyptus oils in olive oil. His experience had been that cough and expectoration had both been lessened, while the temperature had fallen and the general condition had been improved.

DR. W. E. CASSELBERRY believed that the benefit from this plan of treatment was confined entirely to the bronchitic element of the disease. He had no confidence in its alleged effect upon the general course of the tuberculosis. It did, however, benefit some of the symptoms attributable to the mixed infection which pulmonary tuberculosis presented.

D. J. SOLIS-COHEN observed that this was not a new plan of treatment, as it had been practised forty years ago. Its greatest benefit was seen in cases of bronchiectasis.

*Correction of Deviations of the Nasal Septum.*—DR. JOHN O. ROE, of Rochester, read this paper.

It was an exposition of the plan of operation previously presented by the writer, whereby the septum was fractured by a fenestrated omminuting forceps. Of all deviations

five per cent. involved the posterior part of the bony septum, twenty-five per cent. the anterior cartilaginous part, and from sixty-five to seventy per cent. the osseo-cartilaginous junction. Other descriptive terms simply referred to varieties and not to location. For anterior deviations he advocated a horizontal incision and an oblique bevelled incision, forming more or less of an angle with the first. By this device, the flaps would more easily slide by each other.

*Surgery of the Turbinal Bodies, with a New Method of Operating.*—This paper was read by DR. J. E. BOYLAN, of Cincinnati.

He advocated the removal of large portions of turbinates when the obstruction had resulted from hyperplastic changes. The obstruction was more apt to be located at either end of the turbinate. Posterior obstruction was rarely of a hyperplastic nature. For instruments he used the saw, snare and scissors, especially the snare. In this way he obtained better results than from the cautery.

DR. W. E. CASSELBERRY used the cautery but was careful to make deep linear incisions, and in this way he had no septic or other trouble. He urged caution in its use on the middle turbinate, care being taken to confine its action to the lower dependent portion of the bone, which he never cauterized on its upper surface.

*Hemorrhage from a Peritonsillar Abscess.*—DR. W. F. CHAPPELL, of New York, related this case.

His patient was a young man aged twenty-seven years, who had had several quinsies, the most recent of which had been opened by an incision through the posterior pillar. Half an ounce of pus was evacuated. Five days later there was a severe bleeding. The urine showed albumin and casts. The bleeding recurred, and the abscess cavity appeared filled with clots. An incision was made through the anterior pillar, and the cavity washed out and packed daily for ten days, at which time the patient was well. Later a rheumatic attack came on without cardiac lesions. The condition of the kidney had continued up to the time of latest observation. When the cavity was opened for washing out, the ascending pharyngeal artery could be seen, but there were no evidences of ulceration. Dr. Chappell had been able to find the records of ten similar cases. All had occurred in patients in whom the quinsy had burst spontaneously. In no case had there been immediate hemorrhage. Of ten cases, eight had been fatal. In the two recoveries the carotid had been tied. The lesson from these figures was to open early.

## ABSTRACTS FROM CURRENT OTOLOGIC, RHINO- LOGIC AND LARYNGOLOGIC LITERATURE.

### I.—EAR.

#### **The Therapeutic Effects of Vibratory Massage in Chronic Deafness.**

OSTMAN, PROF. (*Laryngoscope*, January, 1900.) Ostman gives the details of his observations in three cases and arrives at the conclusion that vibratory massage is contraindicated.

1. In all the acute inflammatory conditions of the sound conducting apparatus.

2. In all diseases of the sound perceiving apparatus with normal sound conduction. If, however, rigidity of the ossicles exists it would be well to try the massage.

3. It would seem from its mode of operation, that vibratory massage is of little benefit in middle ear diseases, attended with retraction of the ossicles, in simple chronic middle ear catarrh, or when there is extensive atrophy of the membrana tympani.

To form a fair estimate of possible benefits, two weeks of treatment is necessary in all cases.

*Seymour Oppenheimer.*

#### **History and Discussion of a Case With Meniere's Lyndrome.**

HOOPLE, HEBER N. (*The Laryngoscope*, December, 1899.) A case is reported of chronic non-suppurative middle ear disease attended with involvement of the labyrinth; in other words a case of mixed disease, with vertigo exaggerated to an unusual degree, simulating the apopleciform condition found in true Menières disease.

After reviewing the opinions of many authorities regarding such a syndrome the author states it as his opinion that the association of deafness with vertigo and perhaps tinnitus, constitutes the ensemble whose pathologic cause is determinative in the disease. In all cases in which they occur together, such pathologic factors are at work as would by their combined effect bring about a state of "hyper-irritability of the labyrinth." This state consists of high tension of the labyrinthine fluids, producing upon

the organ of Corti that effect of loss of function which like the pressure of tension in glaucoma is produced on the rods and cones of the retina.

Many reasons are advanced for this line of thought, the author concluding by asserting that he sees no good anatomico-pathologic basis for separating cases into mild and severe grades, as does Gustav Brunner, for all forms and types would have the common pathologic factor of disturbed intralabyrinthine tension.

*Seymour Oppenheimer.*

#### **The Rinne and Gellé Tests.**

BRÜHL, Freiburg i. B. (*Archives of Otolology*, Vol. XXIX, No. 1.) By routinely carrying out examinations, the Rinné test by Bezold's method using A<sup>1</sup>, C, c<sup>1</sup>, c<sup>2</sup>, and the Gellé test with D<sup>1</sup> tuning forks the author noted the following important diagnostic facts:

1. If the Rinné test is positive, then Gellé is also unexceptionally positive and the impaired hearing is due to nervous affections.

2. If the Rinné test is negative absolutely and totally, or up to c<sup>1</sup>, the Gellé test is unexceptionally negative and the impaired hearing is due to a stapes ankylosis.

3. If the Rinné test is negative below or up to the C limit, and positive above it, then the Gellé test decides whether a stapes ankylosis exists or not. *Campbell.*

#### **A Review of the Present Position of Intra-Tympanic Surgery in Chronic Suppurative Otitis and in Sclerosis of the Middle Ear.**

FERRERI, GHERARDO. (*The Laryngoscope*, December, 1899.) The author in his review of the question of intra-tympanic surgery, concludes that if in sclerosis of the ear, a lesion is in its first phases, and the acoustic disturbances complained of by the patient are not very great it would be reprehensible not to try, before having recourse to surgery, a course of general treatment, combined with intra-tympanic injections. That in cases of incipient sclerosis, in individuals who are still young and robust it would be well, when we have to combat simply hyperplasia or proliferation of the mucous membrane, to try the action of thyroid tablets, taking two or three a day of thirty centigrams (five grains) each, or to use intra-tympanic injections of jequirity, according to the method of



De Rosri, or injections of digestive ferments, (the pepsin of the dog in the strength of one per 10,000) according to the methods of Cohen Kysper, of Hamburg.

That in hyperplastic form which are strictly limited to the middle ear there should be surgical interference only when in addition to other tests Rinné's test remains negative.

That when the patient was afflicted with paracusis and vertigo, but there is no deterioration of hearing, interference should be limited to the extraction of the malleus and incus. Where, however, the operation is not efficacious, and the tinnitus and vertigo return or where there is a gradual loss of hearing he proceeds to mobilization of the stapes, but when in addition to the paracusis a decided diminution of hearing is present, temporary myringectomy is immediately performed.

When surgical interference is necessary to diminish the acoustic disturbances associated with ankylosis of the stapes it is preferable to perform a stapedectomy.

*Seymour Oppenheimer.*

#### **Facial Paralysis as a Complication of Acute Otitis Media.**

MURRAY, Minneapolis. (*Archives of Otolaryngology*, Vol. XXIX, No. 1.) Out of 258 cases of acute otitis media treated at the Illinois Eye and Ear Infirmary during the year of the author's service the above titled complication appeared but twice and in both of these cases recovery took place shortly after the cessation of the discharge. *Campbell.*

#### **A Method for the Functional Examination of Diseased Ears.**

BEZOLD, Munich. (*Archives of Otolaryngology*, Vol. XXIX, No. 1.) Under the author's direction Edelmann has made a continuous tone series which answers for testing the lower six octaves of the tone scale from  $C_2 - C'''$ , by means of clamped tuning forks with movable weights, two organ pipes and a modified Galton whistle for the adjoining upper part of the scale to the highest hearing limit.

Examination with speech is essential and is our best means to gain a general survey of the hearing power in a given case.

A further functional examination is necessary.

1. When a discrepancy exists between the objective otoscopic examination and the diminution of the hearing for speech.

2. In cases of slight deafness where Mt. and the middle ear show no objective changes.

In carrying out the examination the procedure is as follows:

(a) Determination of the upper and lower limits with the continuous tone series.

(b) Measuring the hearing duration (usually for A and a') from the vertex after Schabach.

(c) Rinné's test (usually with a') with the difference noted in seconds between air—and bone—conduction.

(d) Weber's test.

In order to have a uniform method of expression for annotating our hearing tests we should follow the numeration given by Helmholtz.

C <sub>2</sub>	C <sub>1</sub>	C	c	c'	c''	c'''	c <sup>iv</sup>	c <sup>v</sup>
16 v.d.	32	64	128	256	512	1024	2048	4096

To measure an equal pressure of the forks in Schwa-bach's and Rinné's tests, let them rest on the vertex by their own weight.

The tone limit is given by the lowest tone that can be perceived, an island by the two border tones still perceived, a gap by the two border-tones not perceived. *Campbell.*

#### The Intratympanic Masseur.

WEAVER, W. R. (*The Laryngoscope*, November, 1899.) The writer describes an instrument which he devised, which he terms the "Intratympanic Masseur." It can be tolerated by the patient longer than ordinary Politzer-ization and gives the best results in tympanic disease where there is the least amount of Eustachian irritability.

*Seymour Oppenheimer.*

#### A Case of Cerebral Abscess Following Purulent Inflammation of the Middle Ear—Operation--Evacuation of Abscess--Death.

MAY, New York. (*Archives of Otolaryngology*. Vol. XXIX, No. 1.) The patient, two years previously, had severe pain in the left ear, followed by discharge. The discharge continued one year, then ceased. Two weeks prior to admission pain and discharge again were complained of, she became irritable, excited and began to moan and scream. This stage was soon succeeded by drowsiness. Pulse, 60; temperature, 99.6°F. Ophthalmoscopic examination showed papillitis of moderate severity on both sides.

Mastoid tender, but no swelling or redness over it. On opening the mastoid process it was found eburnated and almost devoid of cells. The antrum was opened and found empty. The scalp incision was carried upwards and the cranium opened  $1\frac{1}{4}$  inches behind the centre of the external auditory meatus and  $1\frac{1}{4}$  inches above its horizontal plane. The dura was somewhat congested; an aspirator needle was pushed into the temporo-sphenoidal lobe, and at a depth of one inch, two drams of fetid pus found. The brain opening was enlarged and drainage tube and gauze inserted. The patient did not rally after the operation. No autopsy was permitted, but there was no sign of meningitis, no involvement of sinuses. The tegmen tympani appeared normal. The attic was found full of pus, granulation tissue and cholesteatomatous masses. *Campbell.*

**Rheumatoid Arthritis in Chronic Diseases of the Middle Ear.**

R. A. BAYLISS. (*Laryngoscope*, November, 1899.) A large number of cases of rheumatoid arthritis were observed to be extremely deaf, both ears being affected to a similar degree.

The condition came on gradually and progressively became worse. The customary tests showed loss of hearing worse for the lower tones and at times the watch was quite inaudible unless held close to the auricle. Rinné's test gave nearly always a marked negative. On applying the fork to the vertex a positive result was obtained on one side or another, though occasionally the patient was unable to differentiate between the intensity of sound conveyed to each ear.

The drum membrane was found as a rule to be thickened and the handle of the malleus foreshortened, and the anterior and posterior folds accentuated.

The writer believes from a pathologic standpoint, the trouble begins as a chronic inflammation of the ossicular joints with cartilagenous degeneration and subsequent erosion of the bones, leading to complete ankylosis.

Daily Politzerization and suction and the use of Lucae's spring probe as an adjunct to other treatment are recommended.

*Seymour Oppenheimer.*

**A Series of Cases of Suppurative Disease of the Temporal Bone, With Comments.**

BURNETT, Washington. (*Archives of Otolaryngology*, Vol. XXIX.,

No. 1.) The author reports seriatim the histories of ten cases occurring in the white and colored races; the series comprising simple cases to those most severe ending in death, and the ages vary from six months to seventy-two years. He notes as his experience, covering a period of more than twenty years, that middle ear sclerosis is much less common among adult negroes than among the whites, furthermore he has never seen a case of mastoiditis in an adult negro.

Negro children, however, are very subject to diseases of the bones, particularly in the form known as tubercular. The negro child is usually badly nourished, has a low power of resistance and recuperates slowly. In case 9 inflammation seems to have started in the temporal bone, without any previous ear trouble. The article is well worth reading in its entirety.

*Campbell.*

**Excessive Hemorrhage Following the Removal of a Myxo-Fibroma From Ear.**

DUFOR, Washington. (*Archives of Otolaryngology*. Vol. XXIX., No. 1.) A woman, aged 50, with a history of suppurative otitis media of many years standing, presented herself with a protruding aural polyp and an abscess on the tragus. On attempting its removal with the cold wire snare, it could not be cut through—so it was removed by torsion. Hemorrhage was so free that pressure of the carotid artery was employed. Finally bleeding was checked by packing the canal with iodoform gauze.

*Campbell.*

**A Fatal Otitic Abscess in the Left Temporal Lobe of the Brain, Causing Word-Blindness. Operation. Autopsy.**

KNAPP, New York. (*Archives of Otolaryngology*. Vol. XXIX., No. 1.) A child, aged 12, had left-sided otorrhea off and on since childhood. For the past 18 months discharge has been continuous. Four weeks previous to coming under the author's observation she had an attack of intense frontal headache with nausea and vomiting. Unconsciousness suddenly came on and she had violent convulsions for six hours. Upon examination the patient was found excited, but rational. Temperature 101°F. Eyes normal. Scant secretion from the ear, no sagging of the posterior-upper wall, no granulations, slight swelling and tenderness over the mastoid. Optical amnesic aphasia pro-

nounced. When she was asked the name of an object held before her, she said, "I know what it is, but cannot name it;" when told, she instantly and correctly repeated the word.

The diagnosis made was: deep mastoid epitympanic caries, epidural and cerebral abscess, beginning meningitis. Upon operation the antrum was found packed with cholesteatomatous masses. The posterior cranial fossa was exposed, but the dura and sigmoid sinus showed no abnormality.

The upper wall of the attic was found carious, and was removed. The dura here was congested, slightly uneven and dull. Near the posterior-medial corner was a blackish round spot in the dura, with a central depression through which a probe was passed 4—5 cm. into the brain without any resistance or bringing forth pus or blood.

The wound was dressed and patient put to bed. For two days the child was much improved, was cheerful and named most objects at sight. Then she began to complain greatly of headache, temperature rose, pulse slow, and it was decided to again operate, but death suddenly supervened.

On autopsy the dura showed dark venous congestion, a few adhesions of dura to anterior surface of petrous bone, some also to the occipital lobe.

An abscess cavity occupied the middle of the temporo-sphenoidal lobe. It was surrounded by a dense, uniform white capsule. It was perforated in two places in front, the contents being mixed with the broken-down surrounding tissue and at the posterior medial wall into the posterior outer cornu, the contents filling the lateral and third ventricles and mixing with the softened cortex of the adjacent posterior part of the temporo-sphenoidal lobe.

The inner dimensions of the abscess cavity were: Sagittal 45 mm, vertical 26 mm, horizontal 20 mm. *Campbell.*

**The Petro-Squamosal Sinus; Its Anatomy and Pathologic Importance.**

CHEATLE, A. H., London. (*Journal of Laryngology, Rhinology and Otology*, January, 1900.) The writer considers the comparative anatomy of this sinus, calling attention to the fact that in some of the lower animals—the dog and calf, for instance—it runs across

the roof of the middle ear, making its exit by means of a large foramen between the base of the zygoma and the bony meatal wall. In the higher forms of monkeys, the sinus closely resembles the human. In early fetal life, before the formation of the jugular vein, the petro-squamosal sinus carries all the intracranial venous blood emerging in front to open into the primitive jugular which naturally accounts for its persistence in later life. Examination of 2,585 skulls in the Royal College of Surgeons' Museum showed 23 rudimentary remains, 3 in the glenoid cavity, 3 in the zygomatic process itself, 6 in the base of the zygoma and 11 just external to the glasserian fissure. In infancy and childhood, the sinus, as a rule, is well marked, opening into the lateral sinus behind by means of a valve-like opening and in front joining the middle meningeal vein while in adult life, although it is often marked, careful search must sometimes be made. Numerous irregularities are often seen; it is at this spot that a bridge often forms over the posterior end of the sinus before it opens into the lateral sinus, a common condition in the adult bone. Several interesting specimens are demonstrated. The pathologic importance of the connection between the veins of the middle ear and those of the meninges and occasionally with those of the temporo-sphenoidal lobe is very evident as explaining how infection may spread from the middle ear to the meninges and brain without macroscopic evidence of the connection.

*Loeb.*

**The Topography of the Facial Nerve In its Relations to Mastoid Operations.**

JOYCE, R. D., Dublin. (*Journal of Laryngology, Rhinology and Otology*, January, 1900.) Thirty temporal bones were subjected to systematic examination to ascertain the precise relations of the facial nerve to the surface of the adult skull: its depth as well as that of the external semicircular canal from the surface; and the relation of both these structures to the operations on the mastoid region. Each temporal bone was cut vertically from before backward, beginning in the angle between the petrous and squamous portions, so as to expose the aqueduct of Fallapius in its entire extent; the external semicircular canal was also cut across by the same sec-

tion in every case. The facial canal was projected on the surface by drilling from the exposed canal outward, the holes being made accurately at right angles to the sagittal plan and parallel to one another. The distance of the facial canal was measured from three points on the surface of the bone, viz., (a) immediately behind the external auditory meatus on a horizontal line passing through its centre; (b) immediately behind the upper part of the meatus and immediately below the level of its upper margin; (c) a point high up over the middle of the meatus on the posterior root of the zygoma.

The results of the examinations were as follows:

1. The facial canal lies altogether in front of the mastoid process and a drill sent straight in from any point on the surface of the latter cannot injure the nerve.

2. Measured from point b, the facial canal was in 43.3 per cent. of cases more superficial than the external semicircular canal; in the same percentage of cases this was just reversed; and in the remaining 13.4 per cent. these two structures were the same distance from the surface. Thus the external semicircular canal cannot be taken as a guide to the facial nerve.

3. The average distance of the facial canal from point b is slightly less than that of the external semicircular canal from the same point.

4. In removing the outer wall of the attic, it should be remembered that the external semicircular canal is almost always (91 per cent.) nearer the surface at point c than the facial nerve; however, as it is 1.5 mm. higher than the latter, it is almost out of danger; besides, it has a thicker covering of compact bone in this situation than the nerve.

*Loeb.*

#### **Endothelial Fibro-Angioma of the External Auricular Meatus.**

MELZI, URBANO, Milan. (*Journal of Laryngology, Rhinology and Otology*, January, 1900.) With a Wilde's polypus-remover, a reddish brown tumor with a knotty surface was removed from the posterior-superior wall of the canal. It proved to be of a connective endothelial nature, the surface being covered with stratified and pavement epithelium. Numerous vessels crossed it in every direction forming numerous anastomoses and disposing themselves in groups like a plexus.

*Loeb.*

**Tumor of the Medulla and Pons Causing Deafness and Other Remarkable Symptoms.**

GRAY, A. A., Glasgow. (*Journal of Laryngology, Rhinology and Otology*, January, 1900.) The following signs were present: Whispered voice, right ear unaffected, left ear very deaf, hearing it only at a distance of two inches; watch-tick normal three yards, right ear one yard and left only on contact; tuning-fork by Weber's method, sound best heard in the right ear; with Rinne the fork is heard 35 seconds longer by air than bone conduction in the right ear, while the same for air the left is heard seven seconds longer by bone than air conduction; right membrane tympani normal, left drawn in; left side of palate paralyzed, uvula drawn to right; anesthesia over soft palate; left vocal band rigidly fixed in the middle line, right unaffected; left eye bloodshot and both pupils contracted, the left more than the right; right pupil responds to light but not to accommodation, left to neither; left side of face is paralyzed and lower jaw is stiff; tongue cannot be protruded far and turns to the right; taste abolished on the left side of tongue; plantar and knee-jerk reflexes stronger on left than on right side, ankle clonus absent on both sides; left side of body, face and limbs sensible to changes of temperature, right side cannot distinguish difference between hot and cold tubes; right side cannot tell the difference between contact with a pin and the finger, left side this is possible except on the face; on the left side power of perceiving two separate points of contact as such is much more acute than the right. On autopsy a lesion was found accompanying the left half of the medulla and floor of the fourth ventricle.

*Loeb.*

**A Case of Mastoid Abscess, Followed by Cerebellar Abscess, the Result of Otitis Media: Death.**

DONALD. (*The Glasgow Medical Journal*, January, 1900.) A girl, aged 11, for several years had suffered from intermittent pain in and discharge from the left ear. On admission to the hospital she was emaciated, drowsy and when aroused her speech was slow and jerky. Pulse slow, temperature subnormal. There was mastoid tenderness, but no swelling or redness present. The mastoid was opened and caseous pus and granulation tissue found. The



exploring needle was passed into the cerebellum but no abscess cavity found. The patient appeared to convalesce satisfactorily for about 2 1/2 weeks, though her speech was slow and undecided; then she began to complain of frontal headache, became drowsy, restless and refused nourishment. Coma suddenly developed and the mastoid was again opened; after scooping out soft granulation tissue, there appeared a bulging into the cavity, from its posterior aspect, which proved to be brain tissue. The cerebellum was again exposed and by passing an exploring needle deeply into its substance six drams of pus escaped. The patient did not regain consciousness and died the following day. On post-mortem there was found a septic thrombus of the left lateral sinus with ulceration of its wall, and communicating with a large abscess cavity occupying the left lobe of the cerebellum; thrombosis of the longitudinal sinus with marked dilatation of the veins leading into it. The cerebrum was normal and no evidence of meningitis shown.

*Campbell.*

**Auricular Septicemia from the Color-Bacillus in Association  
With the Bacillus Perfringens.**

BAUP and STANCULEANU. (*Bulletin Medical*, 1900, No. 13.) In case of septicemia arising from thrombo-phlebitis of the lateral sinus, the patient exhibited hypothermia diarrhea and asthenia. The color-bacillus and an anaerobic microorganism, the *bacillus perfringens* of Veillon and Zuber were recovered from the pus in the mastoid, from the sinus and from the blood in the organs at the autopsy. These microorganisms injected separately into animals caused slight lesions; on the other hand when injected together they gave rise to a rapidly fatal septicemia.

*Goodale.*

**A Case of Actinomycosis of the Middle Ear, With Report of the  
Autopsy.**

BECK. (*Prager medicin. Wochenschr.* 1900, No. 13.) A man, fifty-four years of age, exhibited a pure infection of the middle ear from actinomycosis of unknown origin. The bones of the base of the skull became invaded by progressive extension of the process. The left vertebral artery finally became softened and ruptured, producing a fatal intermeningeal hemorrhage.

*Goodale.*

## II.—NOSE AND NASO-PHARYNX.

**The Principles of Stuttering.**

COEN, R. (*The Laryngoscope*, February, 1900.) The gratifying results obtained from the employment of breathing gymnastics in the treatment of stuttering leads the author to define stuttering as a diminution of the faculty of breathing. The therapy involves five principles.

Firstly. (a) Deep continued inspiration.

(b) Short expiratory movement of the breath.

(c) Gradual prolonged extirpation.

(d) Holding of the breath.

All of these exercises should call into use a series of the accessory respiratory muscles, particularly the diaphragm.

Secondly. The regulation of the vocal and speech producing organs by gradually increasing the intensity and rapidity of vocalization of the vowels and diphthongs.

Thirdly. The elimination of the spasmodic periods, which occasion disturbances of innovation. By alternating soothing methods and suggestions with stimulation of the nervous system, hydro and electro-therapeutics and pharmaceutic preparations, this important factor in the pathology of stuttering is controlled.

Fourthly. The strengthening of the will power of the patient.

Fifthly. General stimulation and toning up of the system.

*Seymour Oppenheimer.*

**On Congenital Occlusion of the Choana.**

MORF, J., Winterthur, Switzerland. (*Fraenkel's Archives*, X, 1, 173.) The theory advocated mostly by Koesner, that arrest of development and deformity of the upper jaw and nose are a result of obstruction of nasal breathing has not been universally welcomed. Siebenmann and his school have, on the contrary, come to the following conclusions, based on accurate measurements made on racial skulls of the Bale collection.

1. High, narrow palate (hypsisstaphylia) is, usually, accompanied also by narrowness of the upper part of the face (leptoprosopia).

2. Narrow nasal cavities (leptorrhinea), narrow orbits usually are associated with the "high palate" skull.

3. Hypsisstaphylia, as a rule, is due to a racial peculiar-

ilarity of the skull, and not to extrauterine, later influence of nasal stenosis.

Haag, furthermore, stated that, in 28.6 of all cases of congenital atresia of the choana, a normal palate was found notwithstanding mouth breathing since birth, and proved, in three new cases of bilateral congenital atresia of the choana, that in these also the high palate was but a part of the leptoprosopia. The author considers his case of unilateral congenital occlusion of the choana with high palate in leptoprosopia conformatory of the Siebenmann-Haag theory.

A farmer, 43 years old, complains of impairment of hearing in both ears since birth. For about one year, hearing has become worse, especially in the left ear. He never was able to clear the left side of his nose. There was no difficulty in breathing, because the right nostril was always patent. He states of his own accord that, when he works hard, the left side of the face begins to sweat sooner and sweats more than the right. The left half of the face is somewhat smaller than the right. About 6 cm. within the left nasal cavity a wall can be felt with the probe, bony only in its lower third.

The sense of smell is good on the right, and entirely lacking on the left side. The alveolar border is V-shaped; the hard palate is symmetrical, high, narrow and long. The raphe is very deep. The soft palate is abnormally long; the uvula bifid in its lower third.

1. Length of the hard palate, 6.5 cm.

2. Distance from anterior nasal spine to diaphragm, 5.8 cm.

3. Distance between incisors and posterior pharyngeal wall, 8.8 cm.

4. Height of upper face, 7 c.m.

5. Breadth of molar eminences, 13.5 } upper facial  
height

index =  $\frac{\text{height}}{\text{width}} \times 100 = 51.1.$

6. Greater breadth of bony entrance of nose, 25 c.m.

7. Height of nose, 5.4 cm. therefore nasal index =  
breadth  
height  $\times 100 = 46.29.$

The diaphragm was perforated by a trocar of 1 cm. width;

the upper, bony portion removed through this opening with Krause's double chisel; the large, membranous part, with a probe-pointed knife. The large opening cicatrized without difficulty. The patient now smells as well on the left as on the right side.

In this patient there is, with pronounced hypsistaphylia, a nasal index of less than 47 and an upper facial index of more than 50.1; i. e., and leptoprosopia, just as leptorhinia, in the Siebenmann-Haag cases. If the high palate were to be ascribed to the impairment of nasal breathing, and not to the association with leptoprosopia it would be strange that the left half of the palate is not more marked than the right. To be sure, some cases are reported with a symmetrical palate, but in them the palate sometimes appeared more arched on the unaffected side. It is more probable that this symmetry as well as the atresia of the choana and, what is occasionally found associated with it, the hypoplasia of one or the other (usually the same) side of the face are brought on by intrauterine arrest of development.

*Morgenthau.*

#### **A New Nasal Septometer.**

PYNCHON, EDWIN. (*The Laryngoscope*, December, 1899.) An instrument intended to overcome certain disadvantages which are encountered in the use of Seiler's septometer. It is found particularly useful in ascertaining the thickness of the septum posterior to the crest of the greatest prominence.

*Seymour Oppenheimer.*

#### **The Tumors of the Nasal Septum Exclusive of the Malignant Neoplasms.**

HASSLAUER, DR., Wurzburg, Germany. (*Fraenkel's Archiv.*, X, 1, 60.) The author collected all cases from the literature as far as accessible, and treats of them, laying especial stress on the histology of the single varieties. To each group is added a table of all cases found in literature and of those observed by the author, or left at his disposal.

The 281 cases of septal tumors are distributed as follows: tuberculoma, in 81 cases, bleeding polypus of the septum, 57 cases. In both groups the predominance of women as patients is noteworthy. Compared with these two forms of tumors, the others occur but rarely. Papillary growths were found in 35 cases, of which 20 were

papilloma durum, and 15 were papilloma molle. Fibroma edematosum was found about 30 times, a most remarkably small number considering the frequency of this form of tumor in other parts of the nose. Syphilomata, gummata, etc., in 26 cases, polypoid hyperplasia was observed 16 times. Fibroma, 9 times; myxoma, 6 times; adenoma 4 times; enchondroma, 4 times; cysts, 3 times. In addition, there were 10 cases of various odd tumors. *Morgenthau.*

#### **Asthma in Relation to the Upper Air Passages.**

MCBRIDE. (*Edinburgh Medical Journal*, July 1899.)

The most generally known form of nasal asthma is that variety, which occurs in the course of hay fever. It is generally admitted that hay fever requires for its development a neurasthenic or at least a neurotic condition, which acts as a predisposing cause. Anglo-Saxons are more prone to be affected than persons of other nationalities and it is more common among the well-to-do class.

A less common form of nasal asthma seems to depend upon the presence of nasal polypi and particularly where polypi are small, rather than polypi of larger growth.

In certain cases of hypertrophic catarrh and deviations or outgrowths from the septum we also meet with asthma, which may be benefited by local treatment. The author's experience has been that in those asthmatics with spots on the nasal mucosa, which when touched with a probe produce cough, will be practically cured, when these spots are touched by the electric cautery. These cough spots are usually situated on the inferior turbinated bodies. Cases have been reported as cured after the removal of enlarged faucial tonsils and after destroying granulations upon the posterior pharyngeal wall. On one occasion the author found asthma apparently cured after the removal of adenoid growths from a young boy.

*Campbell.*

#### **The Sense of Smell in General Paralysis.**

TOULOUSE and VASCHIDE. (*Bulletin medical*, 1900, No. 11.) Among twenty women affected with general paralysis, eight possessed no sense of smell. The authors give the proportion in normal adults as one in thirteen. In the cases under consideration, all were able to smell at the beginning of the general affection. The anosmia may be explained either by lesions of the olfactory nerve, or by

localized cortical changes, which are of frequent occurrence in general paralysis. *Goodale.*

**Appropriate Treatment of Certain Varieties of Nasal Deflections and Redundancy.**

KYLE, D. BRADEN. (*Laryngoscope*, January, 1900.) The author attributes all deflections of the septum to three distinct causes.

1. Deflections due to syphilis, tuberculosis and ulcerations following diphtheria, typhoid, etc.
2. Deflections due to traumatism in childhood.
3. Congenital deformity resulting from the pressure exerted in the maternal canal upon the soft nasal bones, during the process of delivery.

Only cases where obstruction to the nasal respiration is present, is surgical interference indicated. The facial expression is markedly dependent upon the freedom of the nares. No plan of treatment is given that would be applicable to all cases of deviation and deflection, Dr. Kyle suggesting that each individual case with its own peculiarities demands its own special modification of treatment.

Several cases and many instances are described in detail. *Seymour Oppenheimer.*

**Caseation of Acute Empyema of the Antrum of Highmore.**

AVILLIS: G, Frankfort - on - the - Main. Germany. (*Fraenkel's Archiv.*, X, 2, 270 ) The consensus of opinions is, to-day, that acute empyema of Highmore's antrum is either cured (spontaneously or with artificial aid) or that it becomes chronic. But the author maintains empyema may terminate still differently, as do other abscesses. They are either absorbed or evacuated spontaneously or artificially, or they become inspissated and caseated.

The author reports three cases lasting several years, months or weeks, in which it was difficult to irrigate the antrum (obstruction of opening into nose), and in which grumous, inspissated, caseous, and very fetid pus was removed. To the surprise of the physicians, one irrigation sufficed for a cure. Only clear water flowed from the nose afterward. The cure was permanent, and objective and subjective symptoms did not return. This almost instantaneous cure, even after long duration of the disease, proves that, in these cases, the contents of the antrum are

not the purulent exudate of the inflamed mucous membrane, which is always renewed, but *dead matter*, a *foreign body*. The author advises in making a prognosis.

1. To await until the day after the irrigation.
2. To examine the pus microscopically when the secretion is fetid and can be removed only with great difficulty.

Grumous appearance and fatty degeneration make a cure probable immediately after opening into the antrum.

*Morgenthau.*

#### **Adeno-Sarcoma of the Nasal Septum.**

BAKER, ALBERT RUFUS. (*The Laryngoscope*, October, 1899.) A case of a woman, age forty-nine, with a tumor upon the cartilaginous septum of the nose, giving a history of obstructed nasal respiration and frequent bleeding. Portion of the tumor was removed with the cold snare. The examination of the growth showed it to be a non-malignant adenoma. Following the operation an otitis media followed, which after stubbornly resisting treatment yielded. Two years later, recurrence of the growth was noticed. The tumor grew rapidly, showed no tendency to bleed, was larger and extended back upon the bony septum. A section was examined and found to be adeno-sarcoma. Operation was performed and no recurrence noticed one year later.

*Seymour Oppenheimer.*

#### **The Condition of the Blood (Hematologic Formula) in Children With Adenoid Vegetations, and its Changes After Operation.**

L. LICHTWITZ and J. SABRAZES, Bordeaux, France. (*Fraenkel's Archiv.* X. 2. 278). Aside from the various symptoms due to mechanical causes in children with post-nasal growths, there are disturbances of the general nutrition (adenoid cachexia). The children are frail; their weight remains the same or increases but slowly, often without loss of appetite or any hereditary taint or any co-existent disease. The authors have investigated if this bradytrophia is not dependent on some profound change in the composition of the blood. Technique. For counting, hematometer of Hayem-Nachet; for determining the quantity of hemoglobin, the hemometer of Fleischl; for staining, fixation at 115° C., eosin, and a mixture of eosin, methylene blue methylal. The percentage of leucocyte types was determined in every case of about 400 white blood

corpuscles. The results found in the examination of the blood in a number of normal children and of some with adenoid growths, before and after operation, are, in average figures as follows:

	Normal Children.	Children with adenoids Before Operation.	Children with adenoids After operation
Red blood corpuscles	5033820	3929505	4,469314
White " "	8490	9487	8208
Hemoglobin	82%	74% per cubic mm.	79.50% per cubic mm.
Polynu-clear {			
neutrophile leucocytes	73% } 6197	56.96% } 5403	65.76% } 5397
Mononuclear	24% } 203	3.33% } 319	3.19% } 270
Lymphocytes	20.12% } 1708	29.11% } 2761	24.60% } 2019
Eosinophile	3.44% } 292	9.99% } 947	6.23% } 911

It appears, therefore, that the change in the blood of children with growths are: a slight degree of anemia and of leucocytosis; increase of the percentage and of the absolute number, per cubic mm. of the large mononuclear cells; and especially of the lymphocytes and the eosinophile cells a decrease, on the other hand, of the relative and absolute proportion of the neutrophile, polynuclear cells. After the operation, the blood approaches the normal condition. These observations are of practical importance in deciding upon the necessity of an operation, for the cachexia of such children is not exactly in proportion to the size of the growths which may be present.

*Morgenthau.*

### III.—MOUTH AND PHARYNX.

#### On Mouth Breathing.

BUNCH. (*The Edinburgh Medical Journal*, July, 1899). The author goes very fully into the causation and results of this pernicious habit and concludes by stating that many phthisical patients, more especially those, whose work keeps them out of doors in all weathers have in earlier years been mouth breathers and it is on account of the tubercle bacilli being inhaled by the mouth and lodging in the folds of the pharyngeal mucous membrane, more especially if there be abrasions there, that the lymphatics carry the bacilli to the lymph glands, where they are incubated under the most favorable conditions, and a tubercular focus results.

*Campbell.*

#### A Case of Longitudinal Hypertrophy of the Tongue.

GIROD. (*Gaz. des Hopitaux*, 1900, No. 26.) A feeble-



mind woman, forty-five years of age, exhibited a tongue the tip of which could be pulled seven centimeters beyond the alveolar border. The organ was normal in thickness, width and consistence but showed much impairment of motility. The enlargement appeared when she was ten years old, following a severe brain fever, and was associated with a corresponding loss of speech. *Goodale.*

#### **Streptococcus Infection of the Mouth in an Infant.**

BRINDEAU and MACE. (*Gaz. Hebdom. de Méd., et de Chir.*, 1900, No. 17.) An infant born at term showed, five days after birth, two pterygoid plaques of apparently benign nature, which on bacteriologic examination were shown to contain numerous streptococci. In a few days one of the patches began to exhibit an increased area of ulceration which rapidly reached the alveolar border of the upper maxilla. The dental cavity of a molar became infected and the tooth was expelled spontaneously. Death ensued shortly from generalized erysipelas. *Goodale.*

#### **Tuberculosis of the Tonsils.**

LABBE and LEVI SIRURGUE. (*Gazette des Hopitaux*, 1900, No. 20.) After a bibliographic review, the authors present the results of their histologic examinations. In the most frequent form characterized by infiltration and ulcerations, sections show the epithelial layer to diminish as the ulceration is approached and finally to disappear. In the cavity excavated by the ulcer are found desquamated epithelial debris and leucocytes. The epithelium in the vicinity presents signs of prolonged irritation and is infiltrated with small round cells and polynuclear leucocytes. The base of the ulcer shows marked alterations in the tonsillar tissues. Most of the follicles have disappeared; those which remain show absence of the germ-centers; the protoplasm of the cells stains poorly.

Where tubercular foci are found, they are present in the form of a giant cell surrounded by a double row of epitheloid and embryonal cells.

Sclerosis is more or less developed according to the case, being at times slightly marked, at others predominating over the specific characters of the original lesions. It may even result in causing the tonsil to become reduced to a

mass of fibrous tissue, containing here and there a few aggregations of leucocytes.

Diffuse tubercular infiltration may also be observed, characterized by the pressure of epithelioid cells without giant cells.

In the miliary form the lesions are in relation to the blood vessels and deeply seated.

Tubercle bacilli are rare in the caseous forms, where they often occur in the interior of giant cells. In the cases of diffuse infiltration they are, on the other hand, very numerous, and occur between the epithelioid cells, being especially abundant on the floor of any ulcerations.

The symptomatology, diagnosis and treatment are reviewed.

*Goodale.*

#### **Retropharyngeal Abscess.**

MARTON. (*Wiener Mediz. Blätter*, 1900, No. 6.) Spontaneous recovery from retropharyngeal adenitis without suppuration occasionally occurs. Sudden death may occur from rupture of the abscess and inspiration of its contents, or from erosion of the carotid artery, or from paralysis of the heart muscle, the latter perhaps in consequence of reflex irritation from the vagus nerve. Early incision through the mouth should be done in all cases if possible.

*Goodale.*

#### IV.—LARYNX.

##### **Transverse Wound of the Larynx at the Level of the Thyrocricoid Space; Hermetic Suture of the Larynx, of the Musculo-Aponeurotic Layer and of the Skin; Recovery in Eight Days.**

MORESTIN. (*Gazette des Hopitaux*, 1900, No. 15.) In an attempt at suicide, a man made with a razor a transverse wound in the crico-thyroid space, eight centimeters long, extending into the larynx, where it involved the thyroid cartilage on the left and the crico-thyroid membrane on the right. With fine catgut sutures, the opening in the crico-thyroid membrane was closed without passing through the laryngeal mucous membrane. The separated portion of cartilage was also reunited with sutures, though with difficulty, owing to its friable nature. The succeeding layers of muscle, aponeurosis and skin were finally

tightly sutured. The patient was able immediately to speak in a natural tone. The operation was done without anesthesia. The stitches were removed from the skin in eight days. Subsequent examination showed a soft pliable cicatrix without adhesion to the deeper layers. Respiration and phonation were normal. *Goodale.*

#### **Disturbances of the Singing-Voice.**

ZWILLINGER. (*Pester Mediz. Chirurg. Presse*, 1900, No. 9.) The author recommends that all singers at the beginning of their musical career should undergo an examination at the hands of a competent laryngologist, with the object of having any pathologic conditions corrected, especially nasal obstructions. Early attention to such matters may not only render the work of the singing teacher much more productive of results but may avert actual ruining of the voice.

Among pathologic conditions of the larynx affecting the singing voice in particular the author distinguishes habitual hyperemia as differentiated from chronic catarrh by the absence of the dark grayish red color and dilated vessels of the latter. *Goodale.*

#### **Operation on Pharyngeal Tonsil; Hemophilia; Death.**

SOCH, RICHARD, Hamburg. (*Journal of Laryng., Rhin. and Otol.*, February, 1900.) A pharyngeal tonsil as large as a walnut was removed in one piece from a boy, aet. 10, with a modified knife, a combination of Gottstein's and Beckmann's pattern. When bleeding ceased, the father drove home with the child, but later profuse hemorrhage set in which seemed to stop upon tamponing with iodoform gauze. Two hours later bleeding again became profuse but seemed to cease upon the application of fresh tampons with a weak solution of ferric chloride. Two hours later, the writer was again called on account of the severe hemorrhage and at that time he learned that the boy was a hemophiliac and that his maternal grandfather had died of hemophilia. Two days later the child died without cessation of hemorrhage. *Loeb.*

#### **Retro-Pharyngeal Abscess of Auricular Origin.**

MELZI, URBANO, Milan. (*Journal of Laryng., Rhin. and Otol.*, January, 1900.) A month after an attack of double otitis media suppurativa with perforation of the tympanum, a child was taken with severe coryza and bronchitis fol-

lowed by pains in both ears and return of the suppuration on both sides. Marked improvement on the right side followed cleansing and instillation of alcohol with boric acid. After some days symptoms of severe acute pharyngitis, stiffneck and snoring presented themselves and later several attacks of suffocation. Retro-pharyngeal abscess was readily discovered and cured by incision. The same variety of bacteria was found in the pus from the ear and pharynx. *Loeb.*

**The Anatomy of the Frontal Sinus and Anterior Ethmoidal Cells.**

HARTMANN, ARTHUR, Berlin. (*Journal of Laryng., Rhinol. and Otol.*, February, 1900.) The author demonstrated before the Sixth International Otological Congress lantern slides showing:

1. Frontal sinus without frontal cells; (a) with a free opening to the middle meatus; (b) with an opening narrowed by a bulla ethmoidalis.

2. Frontal sinus with frontal cells from which was formed a naso-frontal canal; (a) with regular arrangement of the cells; (b) with irregular arrangements of the cells.

3. The hernia-like formation of the frontal sinus.

4. Absence of the frontal sinus. *Loeb.*

**Papillomatous Growth of the Tonsil.**

CLARK, J. PAYSON. (*The Laryngoscope*, February, 1900.) The author disputes the statement made by Yearsley, that benign tumors of the tonsils are of comparatively frequent occurrence.

A case is cited of a boy, aet. eight, who experienced difficulty in swallowing and talking, caused by a large mass on the right tonsil. This growth was noticed by the patient's mother some three years before, when it has been removed, only to recur in larger size. This time the mass was removed under general anesthesia with the cold snare. The hemorrhage attendant was slight and the recovery uneventful. The patient, unfortunately, has since been lost sight of. The tumor measured  $1\frac{5}{8}$  in. in length, 1 in. in width and  $\frac{7}{8}$  in. in thickness. *Seymour Oppenheimer.*

**Epidemic of Pharyngeal and Tonsillar Inflammation and its Cause.**

MOCK, EDWARD VESTAL. (*The Laryngoscope*, Novem-

ber, 1899.) During an epidemic of throat cases, the writer was convinced that the specific cause was not in the throat but that the cases were a mild form of some of the fevers in which there is throat complications generally, but without the appearance of the positive symptoms whereby a diagnosis could be proven.

*Seymour Oppenheimer.*

#### V.—MISCELLANEOUS.

##### **Taking Cold.**

MILBURY, FRANK S. (*The Laryngoscope*, February, 1900.) The author after reviewing the physiology of animal heat production and radiation, concludes that a disturbance of equilibrium of heat production throughout the body, results in a local inflammation, plus constitutional derangement; thus if heat production is arrested at one part, it goes out with increased intensity to another, causing inflammatory action in certain parts of the body, locating itself at the weakest points.

The treatment advocated is both local and constitutional.

*Seymour Oppenheimer.*



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AND  
LARYNGOLOGY.

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XIX.

TERTIARY SYPHILIS OF THE NOSE.\*

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ALS, ETC., ETC.

According to Sir Morrell Mackenzie, syphilis of the nose was recognized and described as early as 2600 years B. C., by a Chinaman. The recognition of nasal lesions in conjunction with what is now known to be syphilis has been spoken of by innumerable writers and historians from that early date down to the present time. It is largely tertiary syphilis that has attracted attention, inasmuch as the symptoms of primary and secondary lesions are of comparatively slight duration and severity, leaving but trifling if any after effects. It is also this form of syphilis which manifests itself in the disease due to heredity, and, therefore, a description dealing with tertiary syphilis in general, will answer for that known as congenital as well as that recognized as acquired.

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\*Read by abstract before the Colorado State Medical Society, June 20, 1900, being part of the Symposium on Syphilis.

The *importance* of tertiary syphilis of the nose is not only in the lesions and deformities of this organ, but according to Jouslain<sup>1</sup> it often indicates a predisposition to and possibly the commencement of manifestations in deeper structures.

According to Schech<sup>2</sup> the *frequency* with which nasal syphilis occurs, is subject to considerable difference of opinion among different authors. Thus he quotes Mauriac who found pharyngonasal syphilis in 237 cases of the tertiary lesion, and Willigk, who only found 2-<sup>8</sup>/<sub>10</sub> per cent. in 218 cases. According to Schubert<sup>3</sup> in 7000 cases of ear and nose diseases 42 were found to present syphilitic manifestations and of these 30 cases belonged to tertiary lesions. It has been shown by Michelson<sup>4</sup> that those cases whose early manifestations were not treated by mercury were by far the most likely to develop tertiary lesions.

The *time of onset* may be anywhere from a few months after the infection to many years. Mauriac quoted by Lang<sup>5</sup> describes a case of necrosis of the bones in the seventh month of syphilis. In hereditary syphilis, tertiary manifestations may appear as early as the third month (Kyle<sup>6</sup>), while the most frequent time for their appearance according to nearly all authors is the age of puberty.

The typical and usual *pathologic lesions* of tertiary nasal syphilis are those of gummatous deposits followed by deep ulceration, caries, necrosis and the development of characteristic cicatricial tissue. These lesions may be found in and upon various portions of the nose. The septum it seems is the most frequent site. The external nose, both skin and bone not infrequently, however, are involved in the destructive process.

A condition called "acne syphilitica," and described by Horaud<sup>7</sup> is characterized by the appearance of pustules covered with black crusts, scattered irregularly over a dark red thickened skin.

External gummata are described by Schech<sup>8</sup> and Lang. Unusual external manifestations resembling lupus have been noted, and this condition has been called "lupus syphiliticus". Cases of this description are spoken of by Cohen,<sup>9</sup> McBride,<sup>10</sup> Schech,<sup>11</sup> Wolfenden<sup>12</sup> and others. A somewhat similar condition is described by Bulkley<sup>13</sup> as "tubercular syphilide."



It has generally been believed that swelling of the nasal mucosa either over the septum or the turbinate bodies and occurring as a tertiary manifestation, always indicates more or less gummatous infiltration, which necessarily leads to caries and necrosis. I am convinced from the observation of a number of cases that while swelling of the septal mucous membrane of a peculiar edematous character without traumatic cause, is a manifestation of syphilis, it may, nevertheless, subside without ulceration or necrosis. While this may be a rare form of the disease, cases other than my own have been recorded by Noquet<sup>14</sup> and Dinisio.<sup>15</sup>

Swelling within the nasal cavity other than simple tumefaction of mucous membrane and differing in their histology from true gummata may at times be seen. These growths have been termed "granulation swellings"<sup>16</sup> and "syphilomata".<sup>17</sup>

Necrosis of bone or cartilage does not always result simply from infiltration and subsequent destruction of the mucous membrane and periosteum covering these structures. It has been abundantly shown that gummatous deposits may find a primary lodging in bone itself,<sup>18</sup> and it is in these cases that most extensive destruction occurs and that explains the apparent transgression of anatomic boundaries.

The most common deformity seen is perforation of the nasal septum, either cartilaginous or bony, or both. It is well, however, to remember that septal perforations are not by any means most frequently caused by syphilis. They are often the result of catarrhal erosions, frequently follow hemorrhagic and other debilitating diseases. (Lennox Browne<sup>19</sup>). According to McBride<sup>20</sup> perforations of the bony septum may be usually considered as syphilitic, while the experiments of Hajek<sup>21</sup> tend to show that necrotic processes in the cartilaginous septum may be caused by streptococci and staphylococci.

As the destructive processes go on we find most extensive lesions, necrosis of the entire contents of the nasal cavities having been noted in not a few instances. Opening of the interior of the nose through the roof and upon the surface has been described by Schech,<sup>22</sup> and DeBlois<sup>23</sup> has called attention to the dangerous complications of necrosis through the nasal fossa into the antrum.

We thus see with what a variety of peculiar tertiary lesions syphilis may manifest itself, and the *symptomatology* will vary according to the nature and site of the lesion. Pain as a rule is not a prominent symptom; it may occur either from pressure in the preulcerative stage of gumma or from periostitis. A case came under my observation in which the pain was so intense as to demand large doses of anodynes in spite of most vigorous anti-syphilitic measures. In this case extensive gummatous infiltration was found in both middle and inferior turbinate bodies upon the left side. Nasal obstruction due either to swelling or later to the accumulation of necrosed tissue, bone or soft parts, is a more or less common symptom. As soon as necrosis sets in, bloody, purulent and scabby discharges occur. Coincident with these is intolerable and characteristic fetor, which is distinguished from all other odors by its intensity and by the fact that it does not disappear after most thorough cleansing of the nasal cavity.

Of greatest importance as well as of greatest difficulty at times, is the *diagnosis* of syphilis of the nose. Gummata of the nose break down slowly and after a considerable period of time, but having once begun their ulcerative processes, it is often difficult to stop the ravages they produce and to prevent such destruction of tissue as will result in hideous and characteristic deformities. The early recognition of this condition should therefore be insisted upon, and we find that it is not difficult to mistake lupus, various tumors, and foreign bodies for syphilis and vice versa. The use of the probe is often of great help. One should always reinforce rhinoscopic examination by attempting to locate necrosed bone with a blunt probe. The microscope will frequently be necessary to clear the diagnosis as between gumma and malignant tumor, but too much reliance should not be placed upon microscopic examination. The history of an initial lesion with the usual secondary phenomena will also aid us, but should not pervert our judgment in the recognition of other conditions in a syphilitic subject, nor should the absence of history be made too prominent a factor against the existence of syphilis, for in my experience it is just in the obscure cases that we fail to obtain even the faintest suspicion of infection.

My case records show a number of instances in which the diagnosis was sufficiently in doubt to deceive men of the highest standing in the profession. I desire to place on record the following:

CASE I. Female child. Age 5 years. appeared at the Gross Medical College Dispensary suffering from diffuse keratitis. The child being a foundling the diagnosis of congenital syphilis as a cause of the keratitis seemed well founded and antisymphilitic treatment was at once instituted. Within a few days the child was referred to the throat department for a sanious, very foul smelling discharge

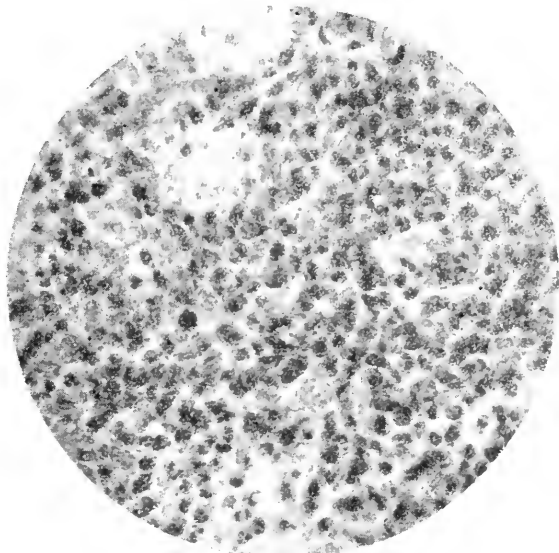


Fig. No. 1.

from the nose. A superficial examination was sufficient to convince me that the child was suffering from nasal syphilis, this diagnosis being confirmed by the history and the condition of the eye. While the keratitis and the general condition of the child improved under mixed treatment, the nasal symptoms did not abate and the foster mother becoming discouraged, took the child to an advertising specialist who quickly removed the cause of all trouble by extracting, from the child's nose, a shoe button.

CASE II. Mrs. F., aged 35, complains of sharp spasmodic pains in the left side of the nose high up and radiating to the forehead and ear. There is a moderate amount

of bloody discharge of not a very offensive character. She has never had a child, nor any miscarriage, gives no history of syphilitic infection or of secondary manifestations, notwithstanding a most painstaking cross-examination. The examination of the nose reveals a small dark red tumor of irregular outline, springing from the region of the middle turbinate. No evidence of necrosis or ulceration is present. The tumor bleeds easily upon touching with a probe. The question of diagnosis resting between syphilis and malignant growth, a portion was removed with a cold wire snare and submitted to two thoroughly competent pathologists. The report of both agreed that the case was one of small round celled sarcoma. (Fig. 1.) The patient was informed of the serious nature of the disease and under the influence of the gravity of the case was urged to recall any possibility of syphilitic infection. The result was entirely negative and the patient was advised to go to the hospital, where it was proposed to perform a radical operation for the removal of the growth. This was agreed to, but on account of certain domestic affairs two weeks were given the patient for preparation. Thinking it well to employ our two weeks in doing something, I placed the patient upon mercury and iodid of potash with the result that in less than the time given the symptoms had all abated and the tumor had nearly disappeared. The patient subsequently developed other unmistakable evidences of syphilis all of which yielded promptly to proper medication.

CASE III. Mr. J. S. J., age 33, unmarried. Presents a most disfiguring appearance of the nose. About three months before the time of my examination small pimples began to appear on the end of the nose, which gave no pain, but which rapidly broke down leaving small superficial ulcerations; history of syphilis ten to twelve years ago. Patient placed himself at once under the care of one of the most prominent rhinologists in the United States, a man whose works on diseases of the throat and nose is a recognized authority. The diagnosis of lupus was made and treatment instituted. Slight improvement occurred from time to time, but upon the whole the disease made decided progress. Another celebrated rhinologist saw the case and coincided in the diagnosis. Upon the 23rd of

August, 1899, I found the following condition. The entire external nose was red and swollen; moderate sized ulcerations with a dark red aureola were irregularly scattered over the movable portion. There were here and there a few faint white scars and upon the alæ and columna and penetrating to the septum, small nodular elevations. The septum itself was slightly swollen and nodular upon both sides. Disregarding the diagnosis previously made, the patient was placed upon mercury and iodid of potash, with such rapid improvement that no question as to the diagnosis could be tolerated.

Case I. may be unique and the error which I fell into would probably have been avoided if I had been more careful in the first examination. I have since seen a case of a child whose appearance gave every indication of profound dyscrasia, probably syphilitic, with foul smelling discharge from the nose, due also to a foreign body which was readily removed.

Case II. has not a few associates in medicine, fibromata or sarcomata having been diagnosed by the microscope in the cases of Knight,<sup>24</sup> Kuttner, Frank<sup>25</sup> and others.

Case III. presents the difficulty in differential diagnosis between lupus and syphilis and recalls the peculiar conditions described as lupus syphiliticus, tubercular syphilide and acne syphilitica, above referred to.

In considering the *prognosis* of tertiary nasal lesions, we take into account the early recognition of the disease, the possibility of extention to vital structures, the extent to which the destructive lesion has gone on, the development of characteristic cicatrices, and the resultant deformities. It is a well recognized fact that when a gummatous lesion has once begun its inroad upon the nasal contents and ulceration has set in, it is with difficulty checked. When, however, the disease is recognized before liquefaction of the gumma and necrosis have started, proper local and general treatment may be found to avert serious sequelæ. The possibility of extension to the cranial contents is spoken of by Mackenzie.<sup>26</sup> The disease having been brought under control, necrotic tissue is discharged and scars of a peculiar contractile character mark the site of former destruction. When these scars are seen upon the surface of the nose they take on a stellate appearance,

which is characteristic. They may develop on the interior in such a way as to more or less completely occlude the nasal passages, as in the case of Mayer.<sup>27</sup> A great variety of deformities results usually from two causes, actual destruction of the nasal septum and adjoining structures and the contraction of the cicatricial tissue itself. Should the nasal bones be destroyed the saddle nose will result. This is not due to destruction of the septum as has so frequently been thought (Thompson<sup>28</sup>), (Schech<sup>29</sup>). A peculiar deformity which we find alluded to in Heymann's Handbuch<sup>30</sup> and which I have frequently observed, occurs in cases of extensive atrophic rhinitis, a condition known as *Kneifernase*. In this deformity there is a depression at the junction of the bony with the cartilaginous nasal framework which is more marked laterally and which is due to distinct atrophy within. This should not be confounded with the saddle nose or the lorgnette nose of syphilis.

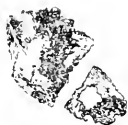


Fig. No. 2.

*The treatment* should be prophylactic, local and general. By active measures early carried out, one may avoid much of the hideous deformities resulting from destruction of tissue and contraction of scars. Mercury and iodid of potash should be actively administered, properly constructed tubes may be inserted to avoid adhesions and the nose may be supported by an artificial bridge. (Kyle,<sup>31</sup> DeBlois.<sup>32</sup>) Should necrosed bone be detected, we should attempt its removal, provided of course, the sequestrum is well separated. Mackenzie,<sup>33</sup> DeBlois,<sup>32</sup> Schech<sup>34</sup> and Hellmann<sup>35</sup> have called attention to the dangers of curretting too early or too vigorously. The sharp Volkmann spoon should be used, however, whenever necrosis has resulted to such an extent that the sequestra may with slight difficulty be removed. Gummatous deposits may be left to the action of internal remedies unless of such a size as to interfere with the functions of the parts. It may become necessary to crush a large sequestrum (Fig. 2) before its removal from a narrow nasal fossa, and at

times the snare will be found a useful aid. Rouge's operation has at times been undertaken in instances in which it was impossible to effect the removal of sequestra by the natural openings. Besides operative local treatment, much may be done for the comfort of the patient by thorough and frequent cleansing with a warm one per cent. solution of potassium permanganate, the application of tincture of iodine and the insufflation of iodoform. Perforations should be treated by cauterizing their margins and applying an ointment of calomel and eucalypti, each 20 grains and vaselin, one ounce.

Here as in other syphilitic manifestations very great attention should be paid to constitutional treatment. As a general thing mixed treatment is to be advised and both mercury and iodide of potassium should be given in gradually increasing doses and to the full limit. The effect of potassium iodide may be largely enhanced by combining it with other iodides, notably iodide of strontium, ammonium and sodium. Much has been done toward the correction of resultant deformities by plastic surgery, and the introduction of artificial bridges. The removal of external scars may be at least partially accomplished by certain heroic measures which have for their object the destruction of the scar tissue and the stimulation of the surrounding skin.

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## XX.

### RECURRING PAROTITIS IN A HEALTHY CHILD PERSISTING FOR TEN YEARS.\*

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OTOLOGICAL ASSOCIATION.

Ephriam M., son of the writer, since the second year of his birth has been subject to recurring attacks of swelling and inflammation of the parotid glands, apparently idiopathic. The swelling has always manifested itself suddenly, as a rule developing to its fullest extent during the night, with little or no constitutional symptoms.

With one exception it has been unilateral. These attacks have occurred at irregular intervals of a few months to a year, becoming notably less frequent as the child has grown older. They are attended with pain on pressure and mastication, but it is never intensely acute.

There has been no attendant enlargement of the lymphatics, nor the slightest hypertrophy after subsidence of the acute symptoms.

The swellings have always disappeared without treatment within three days, generally decreasing somewhat in twenty-four hours.

Fever has been absent. The subject is a vigorous boy, aged eight, and considerable of an athlete for his years. He has never been specially subject to colds, nor shown the catarrhal diathesis. Family history good, phthisical history confined to two great aunts.

He will be remembered by Dr. Dundas Grant, who removed his hypertrophied tonsils during the writer's stay in London, 1893.

There were no adenoids. The last return of the swelling was on the left side six months since.

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\*Read before the meeting of the Western Ophthalmologic and Oto-laryngologic Association, St. Louis, April 5, 6 and 7, 1900.

To confirm my diagnosis that the swelling did not affect the lymphatics, I took him to Dr. P. Y. Tupper, of St. Louis, who fully acquiesced in my opinion.

Numerous and the latest standard works on general surgery and pediatrics have been consulted to find some mention of conditions to parallel this, but with negative results.

The nearest approach are probably the five "obscure" cases reported by Raymond Johnson, in the *Lancet*, April, 1896. He clearly eliminates as an etiologic factor, mumps, enlarged lymphatics, calculus and the sympathetic parotitis of pyemia, typhoid and the complicating swellings of abdominal diseases and injuries, emphasized by Mr. Stephen Paget which are due to the inflammation of the lining of Steno's duct.

In Mr. Johnson's cases the gland was tender to touch, but not acutely so, it was also hard and occasioned discomfort in mastication.

The ages ranged from fifteen months to thirty-three years. In several slighter cases, the socia parotitis alone was affected, and in one case it was attacked first. The conclusion was that the swellings were due to the inflammation of the lining membrane of Steno's duct, preventing the outward flow of the secretion. The case herein reported resembles the Johnson cases in its behavior and obscure origin, being evidently without connection with the ordinary and well-known causes or parotid inflammation.

Without feeling justified in a positive opinion, the writer is inclined to consider this case of simple infectious disease of the duct of Steno (said duct probably extra patulous) causing swelling of the gland by a microbe, the identity of which is unknown. In the *Journal de Med.*, Ed. de Paris, January 1st, 1896, Regnier, surgeon to the Laribiosiere, reports three cases of infection through Steno's duct, but with an accompanying constitutional disease, and points out the fallacy of considering parotid inflammations invariably caused by secondary inflammation of the lymphatic glands.

The glandular pockets are infected, the result of inflammation of the canaliculi. The inflammation originates in the mouth.

Chassaignac was the first to direct attention to this variety. He declared it to be canalicular.

Virchow and Weber also observed cases where pus and lesions were in the canals and alveoli. Grog, as far back as 1873, attempted to prove that all parotid inflammations with a general cause, are secondary to some inflammation in the mouth which extends to the gland. More recent histologic and bacteriologic researches of Dupre and Claisse are confirmatory of this position.

We may justify this supposition by our knowledge that the liver, kidneys and breasts may be infected through their secretory ducts. Further, we know that an abscess is most likely to occur in cases of lymphatic origin, while the knife will bring little or no pus at the time when the inflammation is in the glandular pockets, though it may be pressed out later. Duplay's work on pathology affirms that infection may arrive by way of the lymphatics, but in such event it is not the parenchyma of the gland, but the lymphatic ganglia that are affected. Since the abscess resulting from lymphatic infection always shows pus on opening, it is important to consider the location when diagnosing. We herein conclude that infection may reach the parotid glands either by way of the lymphatics or through their excretory canals. In the one case we have Chassaignac's canalicular parotid inflammation or acinous adenitis, and in the other, simple adenitis.

The mildness of the attacks in the case here reported is taken to mean that the pathologic process never advanced to pus formation. Hence, the designation above, "simple infectious." The unusual good health, absence of fevers and constitutional disturbances, mildness and rapid subsidence, absence of concurrent affection and repeated recurrence, seem to render the case worthy of discussion.

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Since the above paper was presented three years ago to the British Rhinological, Laryngological and Otological Association the attacks have recurred at irregular intervals. I have had Dr. M. A. Goldstein examine the patient in one of them, and he not only confirmed the diagnosis but the fact that the inflammation did not include the adjacent lymphatics.

I have made further investigations to find cases to correspond with this and have succeeded in tracing only one, through the researches in German literature of Dr. H. W. Loeb. This case found presented the recurring inflammation of the parotid gland but there was an accompanying dry mouth, which does not prevail in the one herein described.

Grand and Lindell Boul.

## XXI.

### A CASE OF PNEUMOCOCCIC PERISINUSITIS.\*

BY DR. EDWARD FRIDENBERG,

NEW YORK.

The patient, a girl 4 years of age, previously in good health, complained of pain in the right ear on April 7. On the following day the family physician noted pain in the right ear, temperature 101° (in the rectum), pulse 120. Hot borated instillations were ordered and were followed by a slight alleviation of the pain and lowering of the temperature. But on April 10th, when I first saw the case, the aural pain had increased and pain in the head was also complained of.

I found a fairly nourished, but extremely pale child, spontaneous pain in the ear and head. Temperature 101.5°. On inspection drum was found of a deep purplish color with a large blister like bulging in the posterior upper quadrant. The mastoid was slightly tender to pressure about one centimeter above the tip. Nose and throat normal. Under local cocaine anesthesia I made a large and deep incision through the margin of the drum posteriorly after thorough disinfection of the canal, ordered canal to be kept clean with borated cotton and ear and mastoid region to be constantly covered with hot applications. There was great subjective improvement, pain in the ear ceasing entirely, pain in the head disappearing in greater part. The discharge from the ear at first sero-purulent, become freely purulent, but was not very profuse. The child played about the house. On the sixth day after aural symptoms had arisen the child was brought to my office. She was lively but very pale. On questioning she admitted occasional darts of pain in the head. Circumscribed tenderness over the mastoid without redness or edema of the cov-

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\*Read before the American Otological Association at Washington, May, 1900.

erings was still distinct though slight. On the seventh day, the mastoid tenderness persisting, I advised opening the mastoid, which was done on the afternoon of the eighth day.

The periosteum was slightly thickened, the bone somewhat soft and markedly hyperemic. When about 2 mm. of cortex had been removed, a small amount of pus appeared. The probe entered a very large cavity toward the tip meeting a soft and elastic resistance. The bone was quickly removed from the outer surface of this cavity principally with bone forceps, downward and forward as far as the bulb of the jugular, and posteriorly about one-third of the distance to the torcular. The sinus thus laid bare pulsated. It was completely covered with a peculiar grayish yellow pseudomembrane which had to be removed piecemeal from its walls with forceps. The wall of the sinus after the removal of this pseudomembrane was healthy except a spot about the size of a coffee bean which was granulating. Palpation showed the sinus contents to be fluid. Recovery from the operation has been rapid and uneventful.

On bacteriologic examination of this pseudomembrane (made by Dr. Henry Heiman an eminently competent bacteriologist) it was found to consist of an absolutely pure culture of the pneumococcus (Fraenkel) without any tendency to the formation of chains such as has been frequently described by Bordon, Uffradezzi, Gradenigo and others.

The points of interest in this case are, (1) the excessive rapidity and extent of the process leading to perisinusitis on or before the eighth day after aural symptoms had been noted.

Formerly it was believed that aural disease of pneumococcic origin was somewhat more rapid than that due to streptococci or staphylococci, but that it had little tendency to spread and to lead to serious mastoid or intracranial complications. Now it is supposed to be more virulent or as virulent as any form of aural micro-organism (Leutert, Scheibe, Koerner).

(2) The nearly complete disappearance of pus from the mastoid with its replacement by a pure pneumococcus culture.

## XXII.

### A TUBULAR SEPTUM SAW.

BY SIDNEY YANKAUER, M. D.,

NEW YORK.

This little device which is intended for the removal of spurs from the nasal septum is constructed of a portion of a steel tube  $\frac{1}{2}$  inch in diameter, cut parallel to its axis, and comprising about  $\frac{1}{4}$  of the circumference of the tube—the shank and handle are continuations of this portion of the tube; the cutting part tapers from the heel to the point and from the toothed edge to the back of the blade, as seen in the illustration.



As every saw is guided by its blade this saw must make a cut corresponding to the shape of the tube of which the blade is a part; that is to say, the cut made by it must be cylindrical in shape, similar to the cut made by a drill, but of larger diameter. However the tapering of the blade toward the point, and the beveling from the cutting edge to the back permit of a variation of this curvature from a very concave hollow curve to a nearly flat cut.

The usefulness of such a saw for removing spurs of the nasal septum can readily be seen. It gouges out the base of the spur leaving a smooth hollow surface; this concavity holds the granulation tissue which forms while epithelialization takes place, so that when the wound is healed a flat surface remains instead of the slight elevation which always forms when the incision itself is flat and which is the starting point for recurrences, besides having the appearance of incompleteness in the operation.

The saw takes immediate hold of the base of the growth, as the teeth are applied flat against the septum, instead of sideways as with a flat saw.

Owing to the curvature in the blade the saw does not

“feather,” and is therefore easier to use and less liable to break.

The instrument is of special value in those cases where the spur arises from the floor of the nose. The saw is first made to cut directly inward toward the middle of the septum: it then rotates of its own accord during the operation so as to cut upward and even outward.

On the other hand when the protrusion into one nasal passage is accompanied by a corresponding hollow on the other side, that is, where there is a deviated septum and not a simple exostosis or ecchondrosis, the saw will invariably perforate. In these cases it should never be used.

While the use of the instrument is limited to special cases, in these cases it can be replaced by no instrument but the drill. The difference, both to patient and physician needs no comment.

While the instrument was invented and used by me for nearly two years, it is only proper to mention that a similar “curved on the flat” saw was described by Dr. Edward Pynchon in the ANNALS OF OTOTOLOGY, RHINOLOGY AND LARYNGOLOGY in February, 1900, but his instrument was not tapered toward the point nor beveled toward the back of the blade, two features which considerably enlarge its field of usefulness. But as the main principle is similar, the previous publication of Dr. Pynchon’s description prevents me from claiming priority, although I may still claim originality.

The instrument is made in pairs, right and left, and can be made from various sized tubing.

It is manufactured by Messrs. Tiemann & Co. of New York.



### XXIII.

#### A PECULIAR ENLARGEMENT OF THE TURBINALS.\*

C. P. LINHART, M. D.,

COLUMBUS, OHIO.

In March, 1899, Mr. G., age forty-five, a barber, consulted me in regard to a growth in his nose. He had been married four years, has no children of his own; his wife has three children by a former husband and seems to be a healthy woman. Since her second marriage she has miscarried twice. The first time, a year after the present marriage and again the third year; both miscarriages occurred at the second month.

He said he had noticed some difficulty in breathing through the right nostril for about four months. There was very little hemorrhage and no distinct pain. The discomfort being from the enlargement of the inferior turbinate and the difficulty in breathing through the affected side. He had severe headaches two or three times a week. Externally the nose was sensitive in the region of the bridge. On examination I found a large tumor involving the inferior turbinate, completely occluding the right naris. It bled easily on touch and lacked the appearance of an organized growth. It did not respond to cocain and there was only a slight sanious discharge. The sense of hearing was somewhat dulled, but not to a marked degree. He said that two other surgeons had pronounced it sarcoma, and advised the extirpation of the right side of the nose and right upper jaw.

It was owing to the gravity of this operation that a friend of his brought him to me. I saw one of these surgeons whom he had consulted in reference to the growth, and he gave it as his opinion that it was a sarcoma. He also informed me that a pathologist had examined it and pronounced it a round celled sarcoma.

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\*Read before the Sixth Annual Meeting of the American Laryngological, Rhinological and Otological Society, Philadelphia, June 2, 1900.

I advised a consultation with Dr. Duel, of New York City, and this advice was taken, the patient going to see him some three weeks after his first visit to me. Dr. Duel was skeptical in regard to the original diagnosis. He wrote me March 26, saying, "He (Mr. G.) has been in the Manhattan Eye and Ear Hospital since Tuesday awaiting the report of Dr. Jonathan Wright on a large section which I removed that day for microscopic examination." He further says, "The appearance and clinical history of the growth leads me to doubt very much that it is malignant. The section which I removed has given Mr. G. considerable relief in breathing already, and the fact that it is not proliferating rapidly since is encouraging." The report from Dr. Wright reads, "I can make out nothing that looks like sarcoma—it is a granuloma, probably inflammatory," and he suggested a syphilitic or tubercular origin.

Dr. Duel then removed the whole of the inferior, and a part of the middle turbinate, and scraped the septum with a curette where the growth had been in apposition. After a few days he was sent to me for further care and treatment.

The wound did not do well, in spite of the cleansing and applications of nitrate of silver to stimulate healthy granulations, the right nares again closed with a rather tough granulation which sprung from the site of the operation and the whole wounded surface was swollen and inflamed.

About two weeks after his return the inferior turbinate on the left side commenced to enlarge and press against the septum, and in a few days there were ulcerations on the septum and growth where they came in contact. The nares became so nearly occluded that he had to breathe through his mouth most of the time.

There were no apparent indications nor history of tuberculosis, the man being a robust specimen of physical health, weighing one hundred and seventy-five pounds. No history of syphilis could be elicited; he said that he had contracted gonorrhea when a young man but knew no cause for his present trouble.

Acting on Dr. Wright's suggestion I commenced the administration of potassium iodid, running the dose up to ninety drops of saturated solution a day. Under this treatment the right naris began to improve at once, and

the trouble in the left side disappeared as if by magic; and within three weeks after the commencing of the administration of potassium iodid the trouble on both sides had practically disappeared.

I saw Mr. G. again ten days ago; he has lost ten pounds in weight but he attributes this loss to his close confinement to work. He has been accustomed to take considerable outdoor exercise. On examination I found the site of the operation covered with hardened crusts. He complained of these bothering him, but said after their removal with an alkaline spray the nose felt much better. On removal of the crusts, the appearance of the cicatrices was somewhat pale, but I could see no indication of a return of his former trouble.

I gave him an ointment of:

Ichthyol.....gr. x

Eucalyptol.....gr. x

Benzoinated lard....℥. j

which he says relieves the distress. I also advised the use of iodid. The left side appeared normal in color and size.

Hotel Vendome.

## XXIV.

### CONTRIBUTION TO THE STUDY OF LARVAL TUBERCULOSIS OF THE THREE TONSILS.\*

BY DR. F. BAUP.

TRANSLATED BY

ALBERT MILLER, A. B., M. D.,

ST. LOUIS.

This question, greatly interesting from the viewpoint of prophylaxis of tuberculosis, is of wholly recent origin. It was only in 1894 that M. Lermoyez, having examined adenoid vegetations, which he considered suspicious, found, in the midst of the adenoid tissue, tubercles and Koch's bacilli and demonstrated thus in the clearest possible way the possibility of a concealed, latent infection of the tonsil by the bacillus of Koch. The following year Prof. Dieulafoy extended the discussion which he carried to the Academy of Medicine.

Having inoculated guinea pigs with fragments of tonsils, pharyngeal or palatine, out of eighty-seven inoculations, he found tubercular lesions in fifty of these animals, and he commented in consequence upon the frequency of concealed tuberculosis of the tonsils which he demonstrated "larval tuberculosis of the tonsils." In France and abroad, the works of Lermoyez, Brindel, Pilliet and Cornil, Luzzati, Ricardo Bot  y, Kafemann, Pluder and Fischer, Hynitzsch, Brieger and Lewin confirm this view so affirmatively that the negative results of authors like Broca, Luc and Dubief can not cast doubt upon the existence of a latent and primary infection of either tonsil, of a "larval tuberculosis of the tonsils," in a word.

The question is now upon the frequency of these lesions and their pathologic importance. We have taken up that

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\*From the *Annales des Maladies de l'Oreille, du Larynx, du Nez et du Pharynx*. May, 1900.

study. We have verified it by personal researches which we will condense briefly here. This work will be divided into two parts; in one we will relate the results of the histo-bacteriologic examination of a series of tonsils, and experiments upon animals undertaken by us; in the other we will describe shortly the clinical facts relating to larval tuberculosis of the tonsils.

#### FIRST PART.—HISTOLOGY AND EXPERIMENTATION.

*Histologic Examination.*—In the fine practice of our master, Dr. Lermoyez, at Saint Antoine, we were able to procure vegetations and tonsils removed for therapeutic purposes from subjects whose condition, both pulmonary and general, we verified at the outset in order to remove any idea of secondary infection of the tonsil by tuberculosis. The observation finished, the tonsil or the vegetation was fixed in ten per cent. formol or alcohol, then mounted in paraffin and colored with hematoxylin-eosin or thionin; the search for Koch's bacilli, after Ziel, continuing twenty-four hours. We have thus examined forty-eight tonsils or vegetations. Out of this number we have met tuberculosis once, about two per cent.

The study of the tonsils which were simply hypertrophied appeared interesting in permitting us to recognize almost constantly a series of microscopic lesions which make the hypertrophied tonsil a *locus minoris resistentiae* and which explain the frequency of amygdalitis in those who have them. These lesions, which had hardly drawn the attention of authors before us, are frequent and we will give them a few words here, describing them in order:

*Epithelial Alterations.*—Rapid multiplication of the cells, then lacunar necrosis transforming the epithelium into a veritable lacework; at the same time invasion by polynuclear leucocytes, obstructing the neighboring vessels and going to meet the infecting germs; such is the reaction of the epithelium against infection. These changes were found sometimes upon the entire surface of the organ, sometimes at a point more or less limited. The turnings and the bottoms of the crypts were most often involved.

*Follicular Alterations.*—Rapid multiplication of mono-

nuclear leucocytes. Increase of cell waste in the form of "tingible Körper," then necrosis and cessation of follicular activity, granular appearance of the lymphocytes and invasion now and then by the polynuclears; such are the more characteristic lesions of the follicle. Here, moreover, as in the lymphatic ganglia, this active production of white cells is not destined to operate in situ but the lymphocytes are carried away by the lymph and blood currents to another point in the organism then to be transformed and contend against the generalized infection which accompanies every amygdalitis.

*Lesions of the Connective Tissue.*—Here we are frankly in disaccord with authors who have studied the structure of the tonsils. In effect, it is generally admitted that the fibrous transformation of the tonsil is produced at a certain age, that it is the result often of inflammatory attacks of which these organs are the seat. Now, in our subjects of very different ages (the oldest was 53) it was precisely not in the old that we met with tonsillar sclerosis but in young subjects frequently attacked with phlegmonous tonsillitis following which ablation of the organ was done. Thus in our case of tonsillar tuberculosis in a child of 14, the sclerosis which filled the lesions was very pronounced. This sclerosis admits then of other causes than those generally accepted. The connective tissue of the tonsil swells, increases; the fixed cells return to an embryonal state and play, perhaps, a phagocytic role. Similarly the lymphatic and blood vessels participate in the sclerosis. Finally, in relation to the vessels, we have often remarked interstitial hemorrhages, serous effusions accompanied by a considerable dilatation of the vessels which appeared to us to be the real cause of tonsillar hemorrhage especially when one removes the organs during the congestive phase. Thus constituted, the changes which we have reviewed make the hypertrophied tonsil an easy prey to germs, as well to those of tuberculosis as to others. Upon this point the clinic gives us proof. In studying the tonsils of diphtheritics, Orth frequently met with isolated lesions of the tonsil and Landouzy has remarked the frequency of a grave form of diphtheria in syphilitics whose tonsils were easily inflamed.

*Larval Tuberculosis.*—We give the statistics of the principal cases of larval tuberculosis described to date:

EXAMINER.	NO. TONSILS EXAMINED.	TUBERCULOSIS.
Lermoyez .....	32.....	2
Moure.....	40.....	1
Brindel .....	68.....	8
Pluder and Fisher.....	32.....	5
Brieger .....	78.....	6
Gottstein .....	33.....	4
Hynitzsch.....	180.....	7
Pilliet .....	10.....	3
Cornil.....	70.....	4
Luzzati .....	50.....	2
Lewin.....	200.....	10
Ourselves.....	48.....	1

All these cases have not the same value: those complicating pulmonary or other tuberculosis are suspects. Besides it is necessary, in these statistics, to reckon upon chance; one might fall upon an unfortunate series. That is what must have happened to Broca, Luc and Dubief, one of whom in a hundred, the others in a great number of cases, never met with tuberculosis. Hynitzsch reports in his work that he had at first sectioned fifty-two tonsils without finding bacillary lesions, then after continuing the sections, meeting them in three. Further, it is necessary to follow the histologic examination by inoculation of animals, a more sensitive test, for if search is not made for Koch's bacilli in sections healthy in appearance as we did, a case like ours might escape observation, in which the lesions consisted solely of a vague infiltration and in which only the discovery of Koch's bacilli upon the sections and the positive result of inoculating a guinea pig, permitted us to affirm its tuberculous nature. The difficulty is, moreover, the greater in that, according to general opinion, bacilli are rare in larval tuberculosis; Comil, Danzac and Gottstein have never seen them; others have met with but three or four.

The clinical and histologic observation of our case is as follows.

L—, 14 years. Comes to St. Antoine for consultation concerning a persistent nasal obstruction. A grandmother of the child, with whom it lived constantly, died of pulmonary tuberculosis; always delicate; an otorrhea not yet really cured. All the symptoms from adenoid;

adenoid facies, snores at night, sleep with mouth open, Child is thin, emaciated, no pulmonary complaint, does not cough; some of the cervical glands indurated Pharynx, tonsils incarcerated. A bilobate mass of vegetation in the vault; right ear drum granulating. Operated, upon July 10, 1899; two strokes with the forceps, the remainder curetted. Child, seen six months later; breathes better; no other change.

*Histologic examination.*—In sections colored by hematoxylin-eosin it was to be noticed, under low power, that a great part of each section has not taken the color, making clear islets surrounded by darker zones. Under high power the following lesions were to be noticed:

1. The epithelium is little inflamed. In places only it is necrosed.

2. Clear centered follicles no longer exist; there are to be perceived, surrounding the clear centers, islets of lymphocytes slightly changed and granular, but no karyokinetic figure.

3. The clear zones, already remarked, are made by a vague fibrillary substratum, formed probably by the swollen reticular tissue. Three kinds of cells are to be seen; some scattering lymphocytes, more numerous polynuclears, and finally, several cells of a vitreous appearance, poor in nuclei, very much recalling epithelioid cells. But nowhere in the numerous sections are the giant cells met with.

4. The connective tissue in the cortex of the tonsil as well as deeper is increased and swollen and there is the same sclerocis about the vessels.

5. Search for Koch's bacilli, after Ziel, revealed in several sections Koch's bacilli in little groups of two or three at the level of the infiltrated zones.

The alteration, then, was rather special and not characterized, as in the cases of larval tuberculosis of all authors, by giant cells or tubercles, and only the search for Koch's bacilli cleared up the doubt. A second point of interest is the sclerosis choking off the bacillary lesions.

We have searched the literature to see if this defensive sclerosis has been frequently remarked. Cornil and Ranvier in their treatise on pathologic anatomy notice the frequency of sclerosed tonsils in phthisies. Gottstein indi-



cates the fact in some cases of larval tuberculosis without emphasizing it. Lublinski, alone, attaches great importance to it and believes that the sclerosis strangling tonsillar tuberculosis could explain its rarity.

We, ourselves, besides the very clear personal case which we have just cited, have collected two other cases; one in the practice of M. Marfan in a child affected with cervical adenopathy and frequent tonsillitis and in which the tonsil being partially removed showed great sclerosis; the other, by the kindness of Labbé and Levy, in which at the autopsy of an infant of some months, the glands of the neck were found caseated, and recent tubercles in the spleen and liver. Nothing as to the lungs, but the tonsils were altered and partially sclerosed. The hypothesis of sclerosis forming a barrier to tuberculosis, without being irrefutable is, then, rational.

To resume, we now know several forms of larval tuberculosis of the tonsils: (1) A common form described by all writers of which we have published one case through the kindness of Lermoyez and Macaigne, characterized in a general way by tubercles, isolated or agminated, more or less caseated and surrounded by a zone of adenoid tissue little altered; (2) the form which we have recognized, a vague infiltration whose tuberculous nature is affirmed by the presence of Koch's bacilli; (3) perhaps a sclerosed form, a form of cure.

*Inoculation of Animals.*—Forty-five of the forty-eight tonsils were inoculated into guinea pigs with considerable antiseptic care; each bit for inoculation was taken from the heart of the organ after cauterization of the surface and taking care to avoid the crypts. The guinea pig intended to be inoculated had the belly shaved and washed with sublimate; the fragment of tonsil was introduced by a small incision and the wound was immediately dusted with iodoform, sutured and covered with collodion. In spite of this unusual care some of the animals died of septicemia. Only a single guinea pig, the one inoculated with the tonsil known to be tuberculous developed at the point of inoculation a tuberculous ulcer in which bacilli and caseation of the glands were found. Inoculation, then, confirms the results of the histologic examination.

*Tuberculization of the Tonsils of Animals.*—With nine

animals, two dogs and seven rabbits, we have directly inoculated the pharyngeal cavity with a pure culture of tuberculosis in order to try to provoke tonsillar lesions. The results, although very interesting, were not absolutely conclusive. The two dogs were particularly refractory; the rabbits reacted well but in several cases the inoculation being too strong the entire pharyngeal wall was infiltrated with tubercular abscesses. However, in our later cases we always provoked tuberculosis of the cervical and mediastinal glands without pulmonary lesions. In these cases the tonsils and the greater part of the pharyngeal wall when removed and examined showed the following: the pharyngeal wall was intact and nowhere altered but the tonsils, made up in these animals by a crypt surrounded by follicles, although presenting no tuberculous lesions, were considerably inflamed, their epithelium necrosed and the centers of the follicles gone; farther out the glands near the tonsils were caseous and contained Koch's bacilli. Here, the tonsil seems to have been the port of entry of the bacilli without reacting itself in the sense of tuberculosis.

#### SECOND PART.—CLINICAL STUDY.

*Etiology.*—Several points are to be kept in mind as to the etiology of larval tuberculosis of the tonsils. First of all, heredity, as in any other form of tuberculosis, creates a special susceptibility to the bacillus of Koch. Trautmann was the first to remark the frequency of tuberculous heredity among those who have hypertrophied tonsils. He concluded even, which is exaggerated, that every hypertrophy of these organs has tuberculous origin.

In forty-eight patients we found tuberculous hereditary thirty-one times; however, all writers are in accord in this matter and when one examines not only the cases of simple hypertrophy but also the cases of larval tuberculosis, the role of heredity is still more manifest. It was found in four out of five of Gottstein's cases, four out of nine of Lewin's and two out of three of Lermoyez's. But the point upon which we would insist above all is the fact of direct infection of the tonsils, in subjects predisposed,

in consequence of living with or prolonged sojourn with phthisies, in the family or outside. Our researches upon this point in the working clientele of Saint Antoine leave no doubt. Our little patient, in whom was found the larval tuberculosis lived with her grandmother, a consumptive.

The well known case of Lermoyez is striking: A sick child, affected with tubercular growths, had three brothers dead of meningitis and she herself had been suckled by a nurse who, two years later, died of consumption. More than this, two chambermaids and a steward, having served in the house, have since died tuberculous. Gottstein reports the characteristic case of a furrier whose tonsils became infected while he was manipulating the hides of tuberculous animals. Landouzy has likewise informed us of a case of considerable importance: A young man of bacillary family for whom he cared a long time for persistent tonsillitis determined in spite of advice to study medicine. As a pupil in the hospital service he soon contracted a grave angina, following which the glands and lungs became tuberculous. One cannot insist too much upon the eloquence of these facts.

Tuberculous air and food are then the principal factors in tonsillar tuberculosis; moreover, the bacillus of Koch, found in the nose of healthy individuals by Strauss, and in the tonsillar crypts by Daremberg, easily penetrate the tonsils or growths in a state of lessened resistance which contend poorly against infection. Larval tuberculosis is met especially from three to eighteen years; it is necessary to note also that this is the age of growths and hypertrophy of the tonsils, consequently the age when these organs are operated and examined.

*Symptomatology.*—This is still very vague: too few observations exist. Locally, the tuberculous tonsil is not distinguished from the hypertrophied tonsil, either in the interum or during the inflammatory attacks of which it is the seat. The softer consistence of the organ invoked by Lermoyez and by Chappel as in favor of tuberculosis, depends upon the histologic lesion; in our case it was very hard on account of the sclerosis. The fact of a relapse when the organs are removed is not less characteristic. Possibly the anemia of the soft palate which exists in the

course of tuberculosis of the larynx may also coincide with tonsillar tuberculosis. We have remarked it in our case and Mouret has made one observation.

The general state of the patient will furnish more certain diagnostic points; for, although larval tuberculosis may coexist with apparent health, many of the patients observed showed a state of malnutrition more accentuated than is found in simple hypertrophy—pallor, flabby skin, emaciation, light febrile attacks and loss of appetite. In one case of Lermoyez, attention was directed to tuberculosis by the cachectic state of the patient.

Trials made in Germany with Koch's tuberculin by Brieger and Trautmann gave absolutely negative results. Lastly, the coincidence of tonsillar tuberculosis with other tuberculoses may, in certain cases, give diagnostic points which we will rapidly enumerate.

*Relation to Glandular Tuberculosis.*—It is necessary to recall that cervical adenitis is frequent in every tonsillar hypertrophy without being tuberculous and that even in the cases of tonsillar tuberculosis the glandular reaction may be simply inflammatory. However, the presence of large soft ganglia in the neck coincident with enlarged tonsils is a sign of great value. Lewin cites this association several times; a moiety of the cases in cadavers show the co-existence of tonsillar and glandular lesions. Schlenker remarks it five times. Suchannek reports one interesting case in which a young girl was easily cured of tubercular cervical adenitis after ablation of the tonsils. Dieulafoy insists strongly upon this point and Ricardo Botey has assisted, in a young girl affected with a tuberculous tonsil and invasion of the glands of the neck. This point then has great importance.

*Relation to Pulmonary Tuberculosis.*—This relation is much less clear. Dieulafoy admits that it is only a continuation of the process which, by way of the tonsil, infects the cervical ganglia, then the mediastinal and finally the lung through the lymphatic route. It is necessary to eliminate a goodly number of cases when the infection of the tonsil is due secondarily to the expectoration. The sole conclusion that can be drawn from other cases is that there may exist a tonsillar tuberculosis, isolated and primary, upon which neither minute examination nor autopsy can cast suspicion.

*Relation to Auricular Tuberculosis.*—In Germany the coexistence is well known. Schutz has pointed out the frequency of auricular tuberculosis in the pig; this animal is at the same time often affected with hypertrophy of the tonsils. In man, Fraenkel and Lewin have several times remarked this association. Search for the bacilli, which would have much value, is unfortunately difficult, the tympanum being secondarily infected in the greater part of the cases.

*Relation to Tubercular Meningitis.*—This is a relation as yet poorly understood. Apart from some post-operative cases, one case only of tonsillar and meningeal tuberculosis has been described by Seifert. Besides, one of our friends, Dr. Plottier, in a recent work, in examining the cadavers of twelve dying children of tubercular meningitis found but a single subject with vegetations, without knowing even if they were tuberculous.

Here we stop our work and one may see by this short resumé the prophylactic importance of the question. The tonsils are and must be, more often than is believed, the port of entry of tuberculosis. We have not pretended to present here a finished work but only to furnish data as exact as possible for future research.

## XXV.

# A CRITICAL REVIEW OF THE LITERATURE OF MASTOID DISEASE AND ITS COMPLICATIONS.

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NEW YORK,

LARYNGOLOGIST TO BELLEVUE HOSPITAL DISPENSARY, LARYNGOLOGIST TO UNIVERSITY MEDICAL COLLEGE DISPENSARY, INSTRUCTOR IN LARYNGOLOGY, UNIVERSITY MEDICAL COLLEGE.

While the year 1899 was not productive of any radical discoveries relating to the better appreciation of mastoid disease, nor were any new operative measures devised for its relief, yet great progress was made in otology and the diagnosis and operative technic were placed upon a firmer foundation by minute and detailed studies. The function of the specialist, his ability to appreciate the slightest details presented by the anatomy and the pathology of the mastoid and its relation to the surrounding structures, the cerebral cavity, the sinuses and larger veins, the temporal bone as a whole and lastly to the individual, are becoming better appreciated and as a result the operative procedures upon this region and its contiguous structures, are being performed more by the otologist and less by the general surgeon. During the year many valuable papers have been published bearing upon this subject and it is my desire to direct your attention to the salient features that seem of import in elucidating some of the obscure points attached to the diseases of this region.

While the diagnosis of acute mastoiditis rarely presents any great difficulties and in chronic cases consecutive to suppurative processes of the tympanum, the well known signs of mastoid involvement are sufficiently evident to indicate operative procedures, yet there are certain cases in which additional aid is often of extreme value. This is shown in a communication by Cozzolino and Barrogo-Ciarella,<sup>1</sup> who called attention to a new and pathognomonic system of chronic mastoid empyema: the rapid

reappearance of pus after cleansing of the tympanum and also by its always flowing into a single line over the inner wall of the cavity from the postero-superior to the postero-inferior segment. As no further reports have as yet appeared concerning the practical value of this sign, considerable hesitancy must be expressed before accepting such an equivocal symptom, as it is hardly possible even for the expert, to watch the downward flow of pus as indicated by the author and further, although we fully appreciate the fact that pus may exist in the antrum for long periods of time without producing general or local symptoms other than those of a quiescent chronic otitis suppurativa, yet it seems hardly credible that this should be the only sign present to the exclusion of others of better reputation. One would hardly care to open the mastoid upon the evidence of this single symptom.

Bearing on the differential diagnosis of mastoid disease, is the valuable paper of Bar<sup>2</sup> on the similarity of the anterior mastoid abscess and furunculosis of the meatus. Although this question of diagnosis is not nearly as frequent as the mere determination of the presence or absence of mastoid empyema, yet I have seen several cases in which the differentiation was most difficult. Where necrosis is confined in greater or less part to the anterior portion of the pneumatic spaces, a fistula sometimes forms and opens into the external canal on the posterior or inferior wall and but a few millimeters from the meatus. Around the sinus so produced the dermal lining and periosmium become inflamed and an elevation is produced resembling to a most striking extent, a furuncle. The similarity is decidedly more marked when the opening of the sinus becomes obstructed and the local infection is most accurately simulated. The diagnostic features as given by the author are of sufficient importance to be quoted in extenso.

1. Early lymphangitis and periauricular adenitis are the rule in furuncular affections of the meatus and are late and exceptional in purulent inflammation of the limiting cells. This is consequent on the difference between the lymphatic systems of the external and middle ear.

2. Perimastoid edema effaces the retroauricular depression in furunculosis, whereas in mastoiditis, the depression persists and remains circumscribed.

3. The pharyngeal plexus may become visible through venous stasis, induced by mastoiditis.

4. Spontaneous pains and sensitiveness are more acute in furunculosis: they are less marked in anterior abscess of the mastoid.

5. In inflammation of the anterior cells, facial paresis is sometimes observed, as is also an exaggeration of the sense of taste and a peculiar sensitiveness of the pharynx and the end of the tongue.

6. The bacterial nature of the pus is different in the two diseases.

7. In the absence of any febrile condition, a continuous disproportion between the pulse and the temperature, is in favor of mastoiditis.

In addition to these points I would add that the pain is a constant feature of furunculosis, except in a small proportion of diabetic cases in which the tissue breaks down with little or no disturbance of sensation, while in quite a large proportion of purulent affections of the anterior cells there is little pain and frequently none at all. While in this form of mastoid abscess, a sinus usually exists by the time the patient is first seen and can be readily probed, in my experience this being of the greatest value in the differentiation of the two affections.

The use of percussion in the diagnosis of acute mastoid disease has received considerable attention on the continent and Eulenstein<sup>3</sup> considering this method of some value, has suggested the following conclusions from a study of ten cases:

1. By means on percussion (compared with that of the other side) a positive diagnosis of a diseased condition of the mastoid can be made, provided dullness is elicited.

2. Dullness on percussion indicates the presence of a diseased area near the surface of the bone, the degree of dullness depending upon the extent of the area involved.

3. The absence of dullness is no proof that the bone is not diseased.

4. Where other symptoms of mastoid disease are present and there is no dullness on percussion, it indicates that the diseased area is either very small or deep seated.

5. By percussion we are enabled to recognize mastoid disease earlier and it is a valuable adjunct to the indications for opening the mastoid.



From a study of six cases of acute mastoiditis in which percussion was used as an aid to diagnosis in my hands, it signally was of no service, because light percussion will not elicit any sounds that can be compared with the normal side and where deep percussion is tried the pain is too great so that in the majority of cases the method is impracticable. Further, dulness does not necessarily indicate the presence of pus, as it may be demonstrated in superficial edema of this region without bone involvement. It may also be exaggerated where the bone is sclerosed, or in those cases where the pneumatic cells are few in number or absent near the surface. This was demonstrated in a case recently observed, which complained of intolerable pain over the mastoid area, swelling of the tip and impairment of general health, with an irregular temperature. Dulness over the entire region in comparison with the normal mastoid was marked, but on opening the process, it was found to be normal; the pain being neuralgic in character as proven by its subsequent disappearance, while the swelling resulted from glandular enlargement.

The broadening of the surgical field of the aurist has been but the inevitable outcome of better diagnostic methods and it can safely be said that many obscure head lesions are being better appreciated and their intimate etiologic relationship to aural suppuration affords an inviting field for surgical measures prestiging relief in a greater proportion of cases than has heretofore been possible. This has been greatly aided by the detailed study of individual cases of mastoid disease and its complications, such an instance being reported by Lermoyez<sup>1</sup> of mastoiditis with perforation of the medial plate and consecutive abscess in the neck beneath the insertion of the sternomastoid muscle. This case occurred in an infant, following acute otitis media and, while not unique at all, the report is valuable as teaching two important lessons: the first being that the serious symptoms of an uncomplicated otitis were the result of excessive treatment and, secondly, that the presence of a cervical abscess should always suggest a focus of suppuration in some portion of the aural region.

Mastoiditis with perforation of the medial plate as

pointed out a number of years ago by Bezold, is more frequent than generally supposed and with the deep burrowing of pus the tissues of the neck becomes infected and extensive operative measures is required. Burnett<sup>5</sup> in reporting an interesting case of acute mastoiditis with perforation of the medial plate and consecutive abscess of the neck, takes occasion to call attention to the routes by which mastoid and tympanic suppuration are propagated to adjoining regions. Three ways are currently accepted; by the veins, by the lymphatics and by the direct escape of the pus through a spontaneous opening in the medial plate, this latter being the so-called Bezold's mastoiditis. Lewis<sup>6</sup> and Dunn<sup>7</sup> report similar cases showing clearly the possibilities of harm resulting from delayed treatment of simple mastoid inflammation. The former's case was one in which the process was filled with a cholesteatoma, with an eroded area in the floor of the middle cerebral fossa and another in the wall of the sigmoid fossa. There was an opening along the digastric groove through which the mastoid was in direct communication with an abscess of the neck. As the patient was twenty-four years old and had had a suppurative otitis media from infancy, it clearly becomes evident that the double danger to which she was subjected, both from a suppurative process and a mechanical obstruction to free drainage by the cholesteatoma, should have been removed several years before she was seen by the author. Dunn's case is instructive as showing the extent to which the pus may burrow and extend in several directions from the mastoid focus. There was pain and swelling over the left ear and a partial facial paralysis, but no middle ear discharge at any time. The mastoid was found infiltrated with pus and granulations and the patient did well for ten days, when stiffness of the left side of the neck developed with a swelling over the upper end of the sternomastoid muscle. An abscess was then found lying between the sinus and the inner table of the skull and followed the lateral sinus along its course for about one half inch and the sigmoid sinus for about the same distance. Following these symptoms, pain on swallowing developed and finally an abscess in the neck burst into the esophagus. It will be seen, therefore, that following the original perforation of the

mastoid, the pus had formed an epidural and subpetrous abscess and had then burrowed deep in the lateral cervical tissues, ultimately producing a post-esophageal abscess, with the ultimate death of the patient.

Fougeray\* calls attention to the frequent occurrence of the spontaneous external discharge of mastoid empyemas and thinks that such cures by external evacuation of the pus without operative procedure, have not been sufficiently reported in the literature. He claims that the most frequent spontaneous openings occur over the antrum, while in other cases the opening is developed lower down in the mastoid surface and sometimes it occurs in the digastric fossa. A fourth form occurs very rarely however and consists of an opening upon the occipital surface, the purulent material traveling by way of the pneumatic cells sometimes found in the occipital bone. He also adds to these varieties a fifth, based upon a case under his care, in which the pus discharged itself forwards into the auditory canal by destroying the wall of the attic and the posterosuperior wall of the osseous auditory canal. While these varieties of spontaneous evacuation of mastoid empyema may be frequent in the clinics of the Continent, they are certainly not seen in this country, with the exception of that perforating the medial plate, except when due to some localized expression of a constitutional dyscrasia, as syphilis, tuberculosis and diabetes and even then one is hardly warranted in claiming it to be the result of mastoid disease, as while this process may be implicated, yet the temporal bone to a greater or less extent, is involved in the destructive process.

Of operative procedures upon the mastoid, that of Kuster<sup>9</sup> has been the only new one of importance, although many modifications of older methods have been published. Kuster calls his method an osteoplastic opening of the mastoid, the method of procedure being as follows: The auricle is drawn forward and an incision made along its posterior border beginning a short distance above the level of the auditory meatus. It then passes around the tip of the mastoid and is carried upwards along the posterior border to the same level where it commenced. The incision is made down to the perios-

teum and is U shaped, with the attached portion of the flap above. The periosteum is then pushed aside and following the outline of the flap, a shallow groove is cut in the bone with a chisel. With a broader chisel a thin plate of bone is split off from below upwards, this segment remaining adherent to the soft tissues and the entire flap is turned upwards, leaving the operative field free, the surgeon then proceeding according to the indications present. After all diseased tissue has been removed the flap is replaced, a small notch being made in its lower part for drainage and the case is dressed in the usual manner. The author reports nine cases in which he used this method and he claims that it is superior to other methods because there is little resultant deformity, rapid healing and a good opportunity for the tampon in case the sinus or dura is injured during the operation. This last advantage is so trivial as to require no comment, while in other respects the operation is based on lines radically wrong, as it allows of the external closure of the wound with retention of purulent material and there is no opportunity for the parts to heal from within outwards by granulation tissue.

Suggestive of operative procedures upon the mastoid are the following conclusions formulated by Randall<sup>10</sup> upon the study of one hundred cases:

1. Wilde's incision is not good surgery.
2. Conservatism and expectancy are in order as long as there is no pus demonstrable outside of the middle chamber.
3. When rational signs of pus are recognized, all temporizing must cease and sound surgical principles must be followed.
4. A clean sweep of all diseased tissue must be made and all sinuses must be explored.
5. Have a clean field before you in operating.
6. Good drainage must be established.
7. In chronic cases, it is rarely sufficient to clean out the mastoid alone.

One can hardly add anything to these able conclusions except it be in the choice of instruments and then merely to say that the chisel and spoon should always be used in preference to any method depending upon the trephine, burr or dental engine.

One of the most important questions, engaging the otologist to-day, is the determination in advance of any operative procedure of the danger points of the temporal bone, the relation of the sinus to the surface and the nearness of the cerebral fossa to the proposed operative field. While much labor has been spent in seeking external evidences of these points, success has unfortunately not been attained, although general indications such as those mentioned by Okade<sup>11</sup> are of value. He concludes from the study of 111 skulls that the anthropologic form offers no trustworthy evidence of the presence or absence of the so-called dangerous temporal bone. The relation of the transverse sinus to the field of operation should be looked for, and unusual care taken when operating on the right side; if the mastoid process is unusually small; if the patient has not reached the age of puberty; and more care must be exercised in the case of women than in men. While these indications are but general, yet they present features of value and are necessary in forming part of the foundation for future work in this field.

As the vast majority of cases of mastoiditis are the ultimate result of middle ear suppuration and the majority of the latter proceed from the infectious diseases of childhood, the paper of Dench<sup>12</sup> dealing with the mastoid complications of the exanthemata of children is timely and contains much of value. He considers the treatment under prophylaxis and after the involvement of the mastoid has taken place. Under the former heading the statement is made that in any eruptive fever where a sudden rise of temperature takes place and which is not explainable by the general condition of the patient, we should examine the ears for evidence of inflammation. One is inclined to go even further than this and consider that an examination of the membrana tympana should be made in every instance of an exanthematous affection, as by adhering to this rule, many cases of what would undoubtedly result in mastoiditis would be prevented. Should the tympanum be inflamed a free incision should be made from a point just below the tip of the handle of the malleus, upward to the tympanic ring and if the temperature should be very high, the incision should be extended outward a considerable distance along the roof of the auditory canal,

dividing the soft parts to the bone. This will permit the escape of any secretions should they be present and will also relieve the tension which is a prominent factor in the production of pain.

Should the mastoid become sensitive to pressure, the ice bag or cold Leiter's coil may be applied but if not effectual in forty-eight hours, it should be discontinued. Should there be a discharge from the tympanum, frequent irrigation of the canal with a lukewarm bichlorid solution may be productive of much benefit. If the case is not seen until a fluctuating tumor has developed behind the auricle, we should immediately operate and even in very young children the mastoid antrum should be opened in every instance. Irrespective of the absence of a sinus leading to the interior of the bone, or of an apparently normal cortex, the bony structures should be entered as we always find in these cases some diseased bone, either in the mastoid antrum or in the aditus. In young children the cranial bones are thin and infection of the intracranial structures may readily occur through the external surface of these bones, as well as through the tympanic roof, or through the posterior wall of the mastoid antrum, but if the middle ear is thoroughly drained by a posterior opening into the mastoid antrum, subsequent infection of the intracranial structures is impossible. In regard to the radical measures advocated by the author, in opening the membrana tympani when inflammation supervenes, it certainly appears that this is too severe, when we have the opportunity to use less radical measures, as hot irrigation and, if this and similar means fail after twenty-four hours, then the delay will in no way compromise the case and if necessary the incision in the membrane can be made. While apparently good results are frequently seen from the simple incision of the soft tissues in mastoiditis, these are the cases that return later for a radical operation, when if the primary operation has been thorough, the case would have had no further difficulty. It cannot be too strongly impressed upon every practitioner, that as Dench says, even if the mastoid cortex be apparently normal, we must open it and establish free communication with the middle ear.

If one were required to point out any subject in otology

in which the greatest progress has been made during the year, he would not hesitate in indicating that of the sinus and brain complications of mastoiditis. While this subject has been receiving more and more attention during the past few years, the study of sinus thrombosis received an added impetus from the classic paper of Whiting<sup>13</sup>. He divides sinus thrombosis into three stages; the first being characterized by a parietal or complete thrombus, not disintegrated and accompanied by moderate pyrexia and usually the absence of rigors. In the second stage, there is disintegration of the clot, with resultant systematic absorption; frequent rigors and pronounced fluctuations of temperature. During the third stage disintegration has progressed, with systemic absorption, accompanied by rigors, rapid and great fluctuations of temperature and central or peripheral embolic metastases, terminating usually in septic pneumonia, enteritis or meningitis. The author further remarks that the diagnosis in the first stage is seldom made preliminary to the operation for mastoiditis and the only safeguard against the second stage, is to operate immediately upon the recognition of the first. The transitional period between the two stages is usually brief and its completion is commonly announced by a sharp rigor.

As described by Whiting in performing the operation for sinus thrombosis, the usual mastoid incision is made extending from one inch below the tip of the process, to a point one half inch above the temporal ridge. A second incision is then made beginning at the center of the first and extending backwards two inches or more towards the occipital protuberance. The pneumatic cells and antrum are opened, the sigmoid groove is quickly entered with a curette or rongeur and the thrombus is eviscerated, bleeding being controlled by gauze packing. At the moment the sinus wall is opened, the foot of the operating table should be elevated, to reduce the chance of admitting air to the sinus and to maintain the equilibrium of the intracranial fluids, which might be seriously disturbed by suddenly inducing anemia of the brain, from the profuse bleeding from the sinus.

When symptoms of septicemia develop during an attack of mastoiditis, the indications of sinus involvement are,

as already mentioned, fairly well established; at all events, however, it should be the invariable rule to operate immediately. An exception to this is the report of two cases by Stanculeaumn and Baup<sup>14</sup> but this of course does not in any way invalidate operative procedures. Both these cases terminated fatally and the necropsy showed no lesion of the sinus, nor of any portion of the venous system, but there were fatty changes in some of the viscera and an extremely virulent streptococcus was found in the blood. While the bacteriology of mastoiditis and its complications has received some attention, yet much remains to be done, it now becoming better known that the pneumococcus presents an almost insuperable barrier to medicinal treatment of middle ear suppurations in which this organism is intimately concerned and the tendency to mastoid complications are greater in such instances than is seen with almost all the other organism.

When a thrombus has once formed in the sinus and becomes infected, pyemic symptoms are inevitable; that pyemia the result of mastoid abscess may occur without sinus infection I believe to be possible, although this is combated by Meier<sup>15</sup> who opposes the view that there are several varieties of otitic pyemia, such as that with thrombus of the lateral sinus, pyemia without thrombosis of this sinus, where presumably a thrombus of the small veins of the petrous portion exists and finally where the infection is carried through the lymphatics. In his experience he found on careful examination a thrombus in every instance and believes that it is frequently overlooked and is often situated low down, even in the bulbar portion of the jugular vein, the sinus proper being open above. An exploratory puncture is of no value, for free blood may be obtained even when a thrombus is present.

As shown by Knapp<sup>16</sup> the prognosis of sinus thrombosis with articular metastases is better than when the emboli lodge in the pulmonary area, an interesting case illustrative of the latter being reported by Greene<sup>17</sup> in which the symptoms simulated typhoid-pneumonia. There was pain in the left ear, face and side of head and great swelling of the neck and throat. Chills, fever, emaciation, insomnia and constipation were prominent while the mastoid was edematous and contained a small amount



of pus. In addition, there existed abscesses of the chest, pharynx and neck and a brain abscess was also evacuated, the patient dying in a few weeks from cerebritis. A similar case, but presenting the agreeable contrast of recovery, was reported by Payne<sup>18</sup> in which for acute endomastoiditis, a Schwartze operation was performed, but the temperature continued high, cough and rigors developed and suppuration became so abundant that an extensive Stacke was done. The temperature varied from 96 to 106 degrees for nearly two weeks, when a large slough consisting of a portion of the dura mater, presented at the wound. The exact site of the lung abscess was not determined but its existence was shown by the patient coughing up a large amount of foul pus. After this the case progressed to complete recovery. As well demonstrated by this case, that although the prognosis may be practically hopeless, yet prompt surgical intervention will in many instances save the life of the patient.

1. Cozzolino and Barrago-Ciarella—*Journal of Laryngology*, January, 1899.

2. Louis Bar—*Journal of Laryngology, Rhinology and Otology*, November, 1899.

3. Eulenstein—*Archives of Otology*, Vol. 28, No. 2, 1899.

4. Lermoyez—*Ann. des Mal. de l'Oreille*, May, 1899.

5. Burnett—*University Medical Magazine*, February, 1899.

6. Robert Lewis—*Trans. American Laryngological, Rhinological and Otological Society*, Vol. 8, No. 1, 1899.

7. Dunn—*Archives of Otology*, Vol. 27, No. 6, 1899.

8. Hamon du Fongerey—*Ann. des mal. d'Oreille*, April, 1899.

9. Kuster—*Centrallblatt für Chirurgie*, October 28, 1899.

10. B. A. Randall—*Pennsylvania Medical Journal*, August, 1899.

11. W. Okade—*Archiv. f. Klin. Chirurg.* Berlin, Vol. 58, No. 4, 1899.

12. Dench—*Pediatrics*, June 15, 1899.

13. Whiting—*Archives of Otology*, Vol. 27, No. 6, 1899.

14. Stanculeaumn and Baup—*Progress Medicale*, Paris, Aug. 19, 1899.

15. Edgar Meier—*Munchener Medicinische Wochenschrift*, Oct. 24, 1899.

16. Knapp—*Archives of Otology*, Vol. 28, No. 2, 1899.

17. D. Milton Greene—*Journal American Medical Association*, November 11, 1899.

18. R. M. Payne—*Annals of Otology, Rhinology and Laryngology*, August, 1899.

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## ABSTRACTS FROM CURRENT OTOLOGIC RHINO- LOGIC AND LARYNGOLOGIC LITERATURE.

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### I.—EAR.

#### **Suppurative Meningitis Occasioned by the *Bacillus Lactis Aerogenes* (Escherich).**

SCHEIB. (*Prager Med. Wochenschr.*, 1900, No. 15.) An infant, 8 days old, died with obscure symptoms of general weakness. The autopsy showed bilateral suppurative otitis media, suppurative meningitis, and partial fetal atelectasis pulmonum. The nose and throat appeared normal. Bacteriologic examination showed in the pus from the tympanic cavities and from the meningitis numerous bacilli, morphologically identical with the *bacillus lactis aerogenes* of Escherich. The nasal secretion contained also the same bacillus. The organism exhibited marked pathogenic properties toward white mice, guinea pigs and rabbits. The author considers the presence of the bacilli in the nose to be due to migration from the ear through the Eustachian tubes, rather than to a primary infection of the nose itself.

[In this connection mention may be made of the recent investigations of Grimbart and Legros (*Soc. de biologie de Paris*, May 19, 1900), which leads to the conclusion that the *bacillus lactis aerogenes* is identical with the pneumobacillus of Friedlander. J. L. G.] *Goodale.*

#### **Two Cases of Thrombosis of the Sinus Transversus.**

WANACH (*St. Petersburg Med. Wochenschrift*, 1900, No. 4.) reports two operations. In one case bacteriologic examination of the pus showed numerous streptococci and a bacillus of unknown nature. Relief of the aural symptoms succeeded the infection, but several days later evidence of pulmonary infection appeared, probably from embolism, followed by slow recovery. In the second case staphylococci were present in the pus. Temporary improvement occurred after the operation, but in a few days gangrene of the wall of the sinus, thrombosis of the neighboring veins, pleuritic exudate and general fatal sepsis supervened. *Goodale.*

**Ceruminous and Epithelial Impactions in the External Auditory Canal.**

KOHN, SAMUEL, New York. (*Medical Record*, June 23, 1900.) Ten to fifteen per cent. of all cases of ear diseases have cerumen or other debris in the external auditory canal. The classification, etiology, symptoms, diagnosis and treatment are considered. Patient should not be told that there will be complete restoration of hearing as this occurs in only 30 to 40 per cent. of cases. The usual methods of removal are detailed, the syringe being recommended rather than the curette and forceps.

*Richards.*

**Three Cases of Intracranial Complications Following Acute Otitis Media Purulenta.**

BEZOLD, PROF., Munich. (*Munch. Med. Wochenschrift*, May 29, 1900.) The author emphasizes the fact that serious complications can and do often arise early in the course of an apparently simple acute middle ear suppuration. Detailed history of three cases are given, two of sinus thrombosis and one of cerebral abscess. In the first case symptoms of sinus phlebitis, etc., arose in the fourth week of the acute suppuration. The second case was complicated by facial erysipelas. In 16 days from the commencement of the trouble the serious symptoms arose. In the third case the abscess was already formed by the fourth week. In this case the drum remained intact. All three of the cases were operated upon with recovery in each case. The author in conclusion states that his statistical reports during last 28 years show a larger percentage of deaths following acute than chronic suppuration. The great factor in the etiology of such complications, the author ascribes to anatomic circumstances, peculiar development of pneumatic spaces, etc.

*Allen.*

**A Case of Suppuration in the Mastoid with Optic Neuritis on the Same Side. Operation. Recovery.**

MAXWELL. (*British Medical Journal*, May 19, 1900.) A Chinese girl one month before coming under observation had suffered with acute otitis media.

She had afternoon elevation of temperature, mastoid tenderness and fetid pus came from a perforation in the lower part of left Mt. Pain was chiefly complained of in the temporal region. Mastoid swelling increased and ex-

tended to the temporal region. Pulse 110 to 130. Four days after the first examination left optic neuritis developed.

Upon operation, pus welled up from the mastoid cells; the middle ear was opened and cleared of ossicles and granulation tissue. The wound was packed with iodoform gauze and subsequent history was uneventful. The optic neuritis had disappeared within a week. *Campbell.*

**Pin Introduced into the Ear Passed per Anum.**

PETYT. (*British Medical Journal*, June 30, 1900.) A man had been trying to remove some cerumen from his right external auditory meatus with an ordinary small pin when it slipped in out of view.. The patient had had an old perforation of Mt. and otorrhea of many years standing. While the reporter was making ready to examine the ear the patient said that he felt the pin in his throat. On examination of ear and throat no pin could be found. Three days later the patient felt a pricking sensation while at stool and in the fecal mass found the missing pin.

*Campbell..*

**II.—NOSE.**

**Some of the Reasons why the Surgical Treatment of Nasal Diseases has been placed upon a Conservative Basis.**

RICE, CLARENCE C., M. D. (*Medical News*, April 28., 1900.) A large proportion of so called hypertrophic rhinitis is due to irritation in other parts of the nose, or caused by disease of other parts of the body and should be treated accordingly. Nasal surgery has become more conservative than formerly. Alcohol and tobacco are two of the most powerful etiologic factors in the production of naso-pharyngeal congestion and hypertrophy. Reform in living should be the first measure of treatment in patients of this class. If surgical measures are used for the control of such conditions a traumatic dry or atrophic condition will be likely to result. Hypertrophies of the posterior ends of the turbinates usually depend upon some septal abnormality, the removal of which cures the condition. *Richards.*

**Naso-Pharyngeal Disease in Pediatric Practice.**

HUBER, FRANCIS, M. D., New York. (*Archives of Pediatrics*, August 1900.) (Written for the Jacobi Festschrift).

After reviewing the normal physiology of the nose the author urges the importance of looking after nasal respiration in children, and keeping the nose and nasopharynx clean. Children should be looked after in the pre-operative stage and operations when indicated ought to be performed. He rehearses all the conditions direct and remote which depend upon nasopharyngeal trouble and says that in such children all constitutional troubles as diphtheria, scarlet fever and measles are more severe. The importance of the nasal toilet is dwelt upon. Many of the painless lymph nodes of the angle of the jaw are due to infection from the nasopharynx and frequently subside under nasal injections and cold applications externally. These lymph nodes have a tendency to become tuberculous and the condition ought to be treated not only by surgical removal, but by attention to the adenoids and enlarged tonsils which were the primary cause. The important relationship of nasopharyngeal conditions to ear diseases is fully considered. He regards many obscure inflammations of the brain and meninges occurring between the ages of three and five years as having some etiologic relationship to the nasopharyngeal trouble, the direct lymphatic connection between the vessels at the base of the brain and the nasopharyngeal mucous membrane having been demonstrated.

Children of this class have a diminished power of resistance and develop poorly, producing the well known chest deformities dependent upon mouth breathing. The inattention, dullness, fretfulness, and surliness so often seen are due to the "air hunger" which interferes with the psycho-physiology of the act of attention. The various nervous reflexes are considered. The author has found nocturnal enuresis frequently dependent upon nasopharyngeal troubles, on the removal of which a cure resulted.

"Give the little patients free nasal respiration and give it to them early—the earlier the better." *Richards.*

#### **The Treatment of Purulent Ethmoiditis.**

BOSWORTH, F. H. M.D., New York. (*St. Louis Medical Review* August 11, 1900.) In purulent ethmoiditis, the essential condition is one of imprisoned pus. Each of the trabeculae involved constitutes, as it were, a small abscess. There is but little tendency to a spontaneous cure.

The prominent and practically the only indication is to open each and every cell, and to release the imprisoned pus accumulation. If this be true, the important consideration is as to the best method of accomplishing this end. We may use the gouge, forceps, snare, curette, scissors, burr, spoon or other devices. In my own experience, the end is best accomplished by first uncapping the ethmoid cells by the use of the wire snare ecraseur, and then breaking down the trabecular walls by means of the burr.

#### Anosmia.

OXODI, PROF. A. Budapest. (*St. Louis Medical Review*, August 11, 1900.) The writer reviews the anatomy of the organs and tract concerned in the sense of smell in detail, and laments the fact that so little has been found in a clinical and pathologic way to support the anatomic findings. In very few cases of anosmia have postmortems revealed pathologic changes in the cerebrum and cortex, and even in these cases the lesions have been so large as to prevent any definite conclusions with reference to the center of smell.

In cerebral tabes there has been found atrophy of the root of the olfactory bulb, the olfactory nerves, and a loss of fibers in the so-called center of smell. In brain tumors there have been noted atrophy of the olfactory nerves and inflammatory changes of the pia: in progressive paralysis, loss of fibers in the gyrus uncinatus, and the gyrus hippocampi; in a case of anosmia, reported by Schaffer and Frey, atrophy of the olfactory tract, and changes in the gyrus uncinatus and ammon's horn; in a case of kakosmia, a tumor in the right gyrus hippocampi; in tumors of the gyrus uncinatus and fornicatus, hallucinations of smell were noticed; anosmia has been seen in cases of hemorrhages, emboli and tumors of the temporal lobe, etc.

These observations and others lead to a probable conclusion, that in the human the center of smell is located in the gyrus hippocampi and the gyrus uncinatus. Clinical observations show that lesions anywhere along the tract may cause disturbances in and loss of smell; that there is a partial decussation of the fibers in the cerebrum, and an association of the center of smell and the cortical trigeminus area is not excluded.

The forms of anosmia are classified as follows (1) essential or true anosmia, in which the central or peripheral part of the apparatus of smell; (2) mechanical or respiratory anosmia; (3) functional anosmia. Anosmia due to changes in the peripheral organs of smell may be brought about by inflammation of the olfactory nerves, syphilitic changes polyps in the roof of the nose, chronic ethmoiditis, atrophy of the mucous membrane of the nose in ozena, senile atrophy, etc.

In the true central anosmia there may be found as the cause, tumors of the cerebrum, abscess, hydrops of the ventricles, embolic or hemorrhagic areas, syringomyelia, cerebral tabes, progressive paralysis, senile atrophy and trauma, etc. To these must be added the intoxications, ectogenic and entogenic. The mechanical or respiratory anosmia is due to tumors, inflammatory changes of the mucous membrane of the nose, etc., in fact those affections that cause pressure upon the end nerves of the olfactorius, and prevent a free passage of air through the nostrils. Functional anosmia most often occurs in cases of hysteria. It may also be due to reflex irritation.

#### **Spasmodic Rhinitis.**

JACOBSON, DR. ALEXANDER, St. Petersburg. (*St. Louis Medical Review*, August 11, 1900.)

1. Spasmodic rhinitis, having an etiology and a course that varies, is observed in many varieties and forms.

2. The forms have not been sufficiently studied or differentiated, so that they are easily confounded.

3. It is, therefore, necessary to define with precision hay fever as a variety (the best studied of all), which has a characteristic periodic course and an etiology established by experiments (Blackley).

4. Hay fever is a variety of spasmodic rhinitis (Lermoyez), but this term should not be used to apply to spasmodic rhinitis due to other causes.

5. It must be admitted that these cases of spasmodic rhinitis can be explained by a vaso-motor paralysis—coryza vasomotoria (Moritz Schmidt).

6. There is a form of spasmodic rhinitis which merits the name toxirhinitis (Jacobson).

7. Cases of toxirhinitis are influenced by intoxications and autointoxications; they have an acute course, and

are complicated by gastro-intestinal troubles and cutaneous manifestations (urticaria). The disease attacks persons who are in perfect health, and who have no general predisposition.

8. Considering spasmodic rhinitis as solely of vasomotor origin, nasal hydrorrhea may be included, although it does not present any phenomena of a spasmodic character.

9. Nasal hydrorrhea being due to internal causes may present no local symptoms except that of abundant secretion. In such cases the mucous membrane is neither swollen nor injected.

### III.—MOUTH AND PHARYNX.

#### **Diphtherial Stomatitis.**

TREVELYAN, Leeds. (*British Medical Journal*, April 14th, 1900.) This disease does not include faucial diphtheria but is limited to those cases where the characteristic lesion is situated on the inner side of the lips or cheeks, the floor of the mouth, tongue or hard palate.

The author then relates the history of two cases in both, of which, cultural examination established the diagnosis.

Membranous stomatitis may be due to several different microbes and it may be impossible to distinguish a genuine diphtherial stomatitis from other forms (conveniently classed at present as diphtheroid stomatitis) by a mere inspection of the mouth or by the presence or absence of general symptoms. Hence the importance in all cases, of making a bacteriologic examination. *Campbell.*

#### **Septic, maculo-papular erythema, following a follicular angina.**

DEHIO. (*St. Petersburger Med. Wochenschrift.*, 1900, No. 9.) A woman, 23 years old, was seized with an acute follicular angina, ushered in by moderate fever and a slight chill. On the second day of the illness there was another chill, and the temperature rose to 40° C., with the simultaneous appearance of a peculiar eruption, consisting of slightly elevated, intensely reddened spots, localized on the dorsal surface of the hands and feet and to a less extent on the higher legs, neck, face, and nates. The spots increased in size and number, and the general condition indicated



profound sepsis. The fever terminated by crisis on the sixth day and the emption slowly disappeared. Convalescence was established only after four weeks. The author considers the case to be one of septic intoxication arising from infection through the tonsils. Unfortunately no bacteriologic examination was made. *Goodale.*

**Infections Through the Tonsils in Connection with Acute Articular Rheumatism.**

PACKARD, FREDRICK A., M. D., Philadelphia. (*Philadelphia Medical Journal*, April 21. & 28., 1900.) The tonsils are not evolutionary vestiges but groups of lymphadenoid tissue covered by a placated and involuted mucous membrane, the latter differing in extent and arrangement from that present in neighboring parts. The function of the tonsil is still undetermined; the pouring out of lubricating material, the formation of leucocytes, the migration of leucocytes as lubricants, as scavengers on the surface of the tonsil, and as excretory from the tonsil, have their advocates. The place and character of the leucocyte in the tonsil is not definitely settled; it would seem that they are not of the form which in other parts of the body are considered to have phagocytic action. Experiments have shown that previous healthy tonsils can be invaded by, and also quickly rid themselves of micro-organism. The tonsils ought not to be regarded simply as a seat of frequent inflammatory trouble and therefore as a menace to the organism, but as an extra protective group of lymphadenoid organs placed at a susceptible point, the involvement of which in acute inflammation of the throat is simply an evidence of their activity, and of their battle with an infecting agent. Under proper circumstances, enlarged and diseased tonsils should be removed; i. e., if they fail to destroy the virulence of the organisms they have filtered out; or if they are the seat of organisms still elaborating poisonous materials; or because only by their excision can the susceptible mucous membrane, dipping down into them be reached; or if by repeated infection they no longer perform their function as filters; or if hypertrophied and a mechanical hindrance to proper respiration, the recesses and folds covering them forming resting places favorable to the growth of micro-organisms. Of these the most frequent are the streptococci and the various pyogenic staphylococci.

Five cases of endocarditis, secondary to angina are referred to, in which, the abnormal cardiac signs developed as do those following a first attack of acute articular rheumatism. Similar cases are cited from other authors, one of whom, Gallois, regards nasopharyngeal disease as more frequent in the history of early cardiac disease than rheumatism. Joussett records a case in which agina developed first, the cardiac and pericardiac lesion second, and the articular manifestations last. Many cardiac cases give a history of one or more attacks of sore throat. Suppurative pleurisy and abscesses in other parts of the body have occurred in which the throat was the point of primary infection. Various skin lesions occur in connection with angina as purpura and the various forms of erythema. Two cases of chorea secondary to some angina are recorded. The bacteriology of chorea is given at length with the final conclusion that results as to this disease are still uncertain and its infectious origin not yet proven. Albuminuria with casts occurs in the course of tonsillitis as in other infectious diseases, and cases are cited: Phlebitis, acute yellow atrophy of the liver, peritonitis and acute hydrocele have all occurred as secondary to tonsillitis. Many of the otherwise unexplainable cases of systemic disease of the spinal cord may be caused by an angina. Two general symptoms occurring in the mild cases of tonsillitis should be looked upon as the result of absorption of toxic or septic material from the part infected. Pyemia and the formation of metastatic abscesses while rare occur in connection with tonsillitis.

Acute articular rheumatism is an infectious disease, dependent possibly upon no one organism, but upon a variety of bacteria, and its phenomena can be accounted for by the absorption of toxins. The percentage of cases in which tonsillitis preceded it varies according to different authors from 4 per cent. to 70 per cent.; it is certainly very large. The toxin causing rheumatism may be an attenuated one and it is possible that the frequent entrance of the micro-organism by way of the throat may explain why an acute articular rheumatism develops after a tonsillitis rather than ordinary septicemia or pyemia, for the reason that just beyond the port of entry there is situated a collection of lymphadenoid tissue capable of restraining

the growth and virulence of micro-organism attacking the membrane which it protects. (The above views as to the protective power of the tonsil are certainly at variance with those held by the majority of specialists, who find, clinically at least, that in most persons the tonsil is a menace rather than a protection and that the individual is better off without the tonsil than with it—Reviewer).

*Richards.*

#### IV.—LARYNX.

##### Concerning the Crico-thyroid Muscle.

MICHAEL GROSSMANN. (*Monatschrift für Ohrenheilkunde*, May, 1900.) The above is an address with demonstrations given before the Vienna Laryngological Society on March 1, 1900.

The demonstrations and theoretical deductions are called forth in connection with a discussion before the Society of Hysterical Aphonia. The author divides hysterical aphonia into two groups 1, when on attempts at phonation there is seen a broad oval cleft between the cords; and 2, the much rarer form when the anterior portions of cords overlap and there remains a triangular space posteriorly, with apex at processus vocalis and base at interarytenoid membrane. This latter form the author demonstrates to be due to functional disturbance of superior laryngeal nerve and consequent impaired action of cricothyroid muscle.

Actual demonstrations were made on animals in which this muscle and the superior nerve were laid bare. The author's conclusions as to the function of the cricothyroid and other laryngeal muscles are as follows:—

Phonation is very markedly interfered with in animals in which the cricothyroid has been cut, and not simply the high tones but the entire register. The cords have an increased motility under these circumstances. A contraction of this muscle is seen to occur at every act of deglutition and during expiration. After cutting the muscle animals for some time have difficulty in swallowing, this has also been noticed in the second group of hysterical aphonias.

The cricothyroid, he shows, to be first of all a phona-

tion muscle, in that it causes extension and adduction of the cords, further it is a deglutition and expiration muscle.

The isolated action of the thyroarytenoid muscles is to relax the cords, in connection with the cricothyroids however extension and adduction are effected, the two sets of muscles aiding each other. The thyroarytenoids also are useful in preventing overextension of the cords, and in bringing about the proper tension of single portions of the cords, as is required under the various exigencies of phonation. The cricoarytenoid lateral muscles help to adduct a tense cord, but if cord is relaxed they simply pull the two processus vocales together, leaving the triangular opening spoken about in connection with second group of hysterical aphoniae. The author also discusses briefly the so-called cadaveric position, claiming that without a complete arrest of the action of all the laryngeal muscles such a condition is impossible and that clinically such a state does not exist. Cadaveric position is therefore an unfit term.

Allen.

**On the Symptoms or Phenomena Formerly Known as Croup; the Diseases Which Produce them; and the Clinical Significance of the Various Allied Affections Embraced by the Term.**

SYMES. (*The Dublin Journal of Medical Science*, July, 1900.) The author after enumerating the group of symptoms which we designate as croup briefly gives a description of three diseases—diphtheria, laryngitis stridulosa and laryngismus—in which croup most commonly occurs and in summing up draws the following conclusions.

1. That there is no such true disease as croup, croupy symptoms being produced by a variety of different diseases.
2. That severe croupy symptoms are most likely to be due to either diphtheria or laryngitis stridulosa.
3. That in difficult and doubtful cases we should suspect diphtheria, and treat it as such from the start with antitoxin.
4. That recession and restlessness are the two most dangerous symptoms.
5. That as antitoxin reduces the mortality of diphtheria, and enables cases to be tided over the crisis by

intubation, it may possibly contribute to the future success of tracheotomy.

6. That the deaths registered as croup are mainly due to diphtheria.

*Campbell.*

**Subhyoid Pharyngotomy for the Removal of Malignant Growth of the Larynx.**

LUTZ, DR F. J. St. Louis, (*Philadelphia Medical Journal*, Feb. 24, 1900.) The twelve recorded cases of subhyoid pharyngotomy as compiled by Sendziak are given and the author then records a successful case of his own, operated on under infiltration anesthesia with hot water and the application of 4 per cent cocain to the mucous membrane, and without preliminary tracheotomy. The patient was 73 years old emaciated and with difficulty in swallowing and breathing. The growth was a squamous celled epithelioma in the form of an oblong pale tumor of irregular outline extending across two-thirds of the lumen of the larynx, nodular and sessile, also extending downward and inwardly, covering the esophageal opening, and having its origin on the inner surface of the right aryepiglottic fold, extending to the base of the epiglottis. After infiltration the incision was made one-third of an inch below the hyoid bone extending from the anterior border of the sternomastoid muscle to a similar point on the opposite side. The anterior and external jugular veins, and the sternohyoid and thyrohyoid muscles were divided, and the thyrohyoid membrane exposed and incised through to the opposite side. Cocain was applied to the mucous membrane; a loop of silk thread passed through the epiglottis drew it downward and forward giving wide and free access to the cavity. The tumor extended down into the esophagus and was 1 1-2 inches wide with a base fully an inch in diameter. It was severed from its attachments by scissors introduced behind the mucous membrane. The hemorrhage was trifling.

The severed structure was united with catgut sutures and union resulted by first intention. Death resulted from inanition at the end of a month but the dyspnea and dysphagia disappeared.

*Richards.*

**A Comparative Study of Intubation and Tracheotomy.**

ROCAZ. (*Journ. de Med. de Bordeaux*, 1900, No. 20.) Where facilities exist for performing tracheotomy alone, the operation should be postponed as long as possible, and done only when recovery would be otherwise impossible. Intubation, if done at all, should be performed comparatively early. In the hands of an expert operator, intubation is preferable in the majority of cases. Tracheotomy may subsequently be necessary in case of uncontrollable spasm or where the intubation tube gives insufficient air. Tracheotomy should be immediately done when the physician is suddenly confronted with a child in the last stage of asphyxia.

*Goodale.*

**The Anatomic Pathologic Diagnosis of Cancer of the Larynx.**

FRAENKEL PROF. B., Berlin. (*St. Louis Medical Review*, August 11, 1900.) The microscopic examination of a removed portion of the tumor is of fundamental importance in the diagnosis of cancer. If the result of the examination is negative, a certain conclusion cannot be drawn; on the other hand, where the examination is positive, the diagnosis is certain and the treatment of the case indicated. The only difficulty lies in the fact that the portion removed is ordinarily too small for the purposes of microscopic examination. The specimen should be imbedded in paraffin and cut in serial sections, which should be stained after the method of Van Giesen or with picro-carmin.

The diagnosis is not established by finding epithelial cells in the preparations, although this is suspicious, but by finding collections of epithelial cells in places where normally they are not found. Where the epithelium of the surface penetrates the deeper structures, great circumspection must be exercised in making a diagnosis, in view of the fact that a number of pathologic processes, such as syphilis, may occasion an analogous epithelial hypergenesis. Irregular structure of the epithelium is a characteristic symptom of cancer.

**Diagnosis of Laryngeal Cancer.**

SCHMIDT, PROF. MORITZ, (*St. Louis Medical Review*, August 11, 1900.) The symptoms of laryngeal cancer, hoarseness, stenosis, odor, etc., are not in themselves

characteristic, but are found in many other diseases of the larynx. With the mirror it can be seen that laryngeal cancer takes its origin from different parts of the larynx.

It is to be distinguished, in the great majority of cases from other tumors, in that it retains the original character of a tumor during the whole course of the disease. Some exceptions are to be found in such cases where the disease lies deep in the tissues in the neighborhood of the perichondrium. In this form, a growth of true papillomata upon the surface of the mucous membrane is not infrequently observed. The origin of this form of laryngeal cancer induces a predisposition to perichondritis during its entire development, of the sort which causes the laryngeal picture to be masked.

Cancer of the ventricle of Morgagni often resembles internal perichondritis of the thyroid cartilage.

In two cases the cancer originated from the inferior portion of the posterior wall of the cricoid and showed its presence only by paralysis of the recurrent. One, reported by B. Fraenkel was bilateral, the other, which was observed by the writer, arose from the left side.

The diagnosis, which is sometimes very difficult, even for a practitioner of considerable experience, is to be made between this condition and tuberculosis (two personal cases are reported), syphilis and sarcoma. Inasmuch as the diagnosis of laryngeal cancer is sometimes uncertain, especially among those of limited experience, recourse must be had to other means to aid in the diagnosis, such as anamnesis, examination for traces of the disease, individual or hereditary, antisyphilitic treatment, and excision of a portion for microscopic examination.

#### CONCLUSIONS.

1. Cancer of the larynx presents almost always at the commencement and during the course of the disease the character of a tumor in different forms.

2. Cancer which arises from the deeper tissues of the larynx gives often origin to true papillomata of the surface of the mucous membrane, and often resembles perichondritis in the course of the disease.

3. Cancer of the ventricle of Morgagni presents very

frequently the laryngoscopic picture of internal perichondritis.

4. In rare cases the cancer begins in the lower and posterior part of the cricoid and shows its presence only by a paralysis of the recurrent.

5. To exclude syphilis, it is only necessary to give daily doses of three grams of potassium iodid for two weeks.

6. A positive diagnosis can be made by microscopic examination of a piece of the growth. For this purpose the double curette, cutting from above downward is preferable.

7. A positive result alone is decisive.

#### **The Indications for Thyrotomy.**

SEMON, SIR FELIX, London, (*St. Louis Medical Review*, August 11, 1900,) Thyrotomy is an operation uncommonly performed, and until lately but slightly esteemed. Of late it has been more generally utilized on account of improvement of technique, decreased danger and better results.

*Special Indications.*—In most cases alternative operations may be performed such as intralaryngeal operations, dilatation, intubation, etc.

1. Foreign bodies in the larynx should never be permitted to remain enclosed in the larynx for a long time.

2. Wounds of the larynx. Fractures, gun-shot wounds, suicide wounds.

3. Laryngocele. Indications rare.

4. Stenosis of the larynx. Sometimes (for example in syphilitic fibroid thickening of the mucous membrane) thyrotomy followed by excision of the tumefied portions gives good results. However it is impossible to guarantee the result. Possibility of a return of the stenosis.

5. Acute perichondritis of the cartilages of the larynx. Indication rare, but result sometimes excellent.

6. Tuberculosis and lupus of the larynx. Goris has laid down the indications. Result is sometimes satisfactory, but there is often danger of tuberculous infection of the surgical wound.

7. Scleroma of the larynx. Thyrotomy is apparently the best method, but it does not give a certain protection against recurrence.



8. Benign neoplasms of the larynx. The intralaryngeal method is without doubt preferable when it can be employed, but there are some exceptions to this rule. Discussion of this eventuality. Necessity of individualizing each case. Thyrotomy does not offer a guarantee against recurrence of multiple papilloma.

9. Malignant neoplasms of the larynx. The removal of these neoplasms at the beginning and when they are strictly limited to the interior of the larynx (intrinsic cancer and sarcoma) is at present the most important indication for thyrotomy. Danger of erroneous statistics. Discussion on the relative value of the intralaryngeal method and extirpation of the larynx as compared with thyrotomy. Great value of the latter when the diagnosis has been made in time and when the cases are judiciously chosen for operation.

#### **Technique of Thyrotomy.**

SCHMIEGELOW, PROF. E., Copenhagen. (*St. Louis Medical Review*, August 11, 1900.) The operation, which ought to be preceded by tracheotomy, should be performed under deep anesthesia.

The tracheal canula should be made in such a manner that aspiration of blood during the operation is prevented. Hahn's canula is the best. After opening the larynx by incision of the thyroid cartilage, it is necessary to tampon the inferior portion of the pharynx with a sponge, thereby preventing the saliva from falling into the larynx. A solution of cocain may be used to reduce the sensibility of the mucous membrane of the larynx.

When the operation is completed and the hemorrhage arrested, the interior of the larynx is powdered with iodoform. The wound is entirely covered with cotton and iodoform gauze, which is changed several times a day. The patient should be put to bed in as horizontal a position as possible, and after five or six days will be sufficiently healed to permit the patient to leave his bed.

#### **The Immediate and Remote Results of Thyrotomy.**

GORIS, DR., Brussels. (*St. Louis Medical Review*, August 11, 1900.) In order to review results that are comparable, a circular letter was addressed to specialists in which they were asked to signify the various diagnoses, the age, sex, the exact seat of the disease, the gen-

eral state of the patient at the time of operation, the procedure employed, and, finally, the immediate and remote results of intervention. A resumé of the information received shows the following:

Sixty-two for malignant tumors of the larynx; 14 for tuberculosis; 25 for benign tumors; 2 for stenosis; 1 for foreign body; 1 for rhinoscleroma.

Four of the 105 cases succumbed to pneumonia within a week after the operation. Thyrotomy, therefore, belongs to the category of benign operations, as the death-rate is less than four per cent.

*Thyrotomy for Malignant Growths.*—1. Sex. Malignant tumors affect males more frequently than females. Of the 62 cases 55 were males, 3 females and in 4 the sex was not reported.

2. Age: below 30 years, 0; 30 to 40, 4; 40 to 50, 14; 50 to 60, 20; 60 to 70, 18; 70 to 75, 4; not stated 2.

3. Voice. The results in this regard vary, depending upon the extent of the operation. In the main, removal of one vocal cord permits the utterance of some sound. In some cases, the voice continues excellent after removal of cord, on account of the formation of a cicatricial band.

4. Remote results. Sarcoma has been included with carcinoma, although the tumors have a different malignancy, for the number of sarcomata is too small to influence the statistics. From the 62 cases it will be necessary to subtract 7 in which extirpation of the larynx was performed. The writer includes in his statistics the cases in which at the time of the performance of the thyrotomy, a portion of cartilage was removed. In these cases the thyrotomy remains the important intervention, and the resection the accessory operation. Finally, the statistics include some cases in which the operation has been too recently performed to ascertain the value of thyrotomy (4 of Chiari and 2 of Moure.) There remain then 49 cases, giving the following results:

Surviving more than 10 years, 1 (Boeckel); from 5 to 8 years, 8; from 2 to 5 years, 14; Total, 23.

Or a percentage of 46.9, which may be considered as cures, there were seven cases in which no recurrence took place within a year.

*Thyrotomies for Tuberculosis.*—These results are less brilliant. Only three cases out of fourteen can be considered as cures. In the other cases the operation induced a more rapid development of the diseases.

*Thyrotomies for Benign Tumors and Stenosis.*—The results from the standpoint of voice are variable, but in general they are good. Diffuse papilloma is the condition which most frequently called for the operation; while recurrence was not entirely prevented, it is the operation of choice. In two cases of stenosis of the larynx, one was cured; in the other, normal respiration through the larynx could not be obtained.

In one case of rhinoscleroma, extending to the larynx, Chiari obtained complete cure by excising the subglottic tumefaction.

#### **Pathologic Anatomy and Diagnosis of Singer's Nodules.**

CHIARI, PROF. O., Vienna. (*St. Louis Medical Review*, August 11, 1900.) Various laryngeal lesions are described under the name of singer's (or vocal) nodules. In this paper only the following are studied: These nodules are round or slightly elongated, and lie upon the free border of the vocal bands, more frequently at the junction of the anterior with the middle third. They are always symmetrical. In color they are yellowish white, or reddish white. Ordinarily they have a glistening surface, and are sessile and opaque. In size they may become as large as a pin head. Special characteristics distinguish them from fibromata, cysts, papillomata, and other neoplasms, likewise from tubercular or syphilitic nodules. They never ulcerate and seldom disappear spontaneously.

Authors have different opinions as to their frequency. Chiari has observed them in 1-2 to 1 per cent. of all laryngeal cases and about double as often in the female as the male. Perhaps this is due to the fact that the former pay more attention to the voice than the latter. Above all, these nodes are to be observed among singers, although they are not uncommon in children.

The following are causes: Acute and chronic catarrh of the larynx, overstrain of the voice, and perhaps defective method of singing. Most writers consider these nodules a form of hyperplasia of the epithelium and of the

superficial fibres of the vocal band. This opinion is confirmed by histologic observations, which are considered in the report. Finally, Chiari gives his personal observations resulting from his investigations, and comes to the conclusion that the mucous glands only very exceptionally take part in the formation of these nodules.

#### **Concerning Singer's Nodules.**

KRAUSE, PROF. H., Berlin, (*St. Louis Medical Review*, August 11, 1900.) Singer's nodules are small round bodies, ranging in size from a pin-point to a millet seed, located on the edge of the vocal bands. They usually result from a misuse of the chord in singing, not in talking. Anatomically they are small fibrous bodies with a pachydermal covering, containing fluid. They cause compression and atrophy of the elastic tissues.

The disturbances caused by the nodules manifest themselves in a difficulty of producing certain notes. This necessitates great exertion on the part of the patient, in attempting to supply those notes. Not only do the tones suffer greatly, but this high tension of the local bands results in the condition becoming gradually worse.

The treatment consists chiefly in rest. This will sometimes cause the nodules to disappear. Should this fail, the removal of the growth is justified in an attempt to restore the voice.

#### **Treatment of Singer's Nodules.**

CAPART, DR. Brussels. (*St. Louis Medical Review*, August 11, 1900) The treatment of singer's nodules should be hygienic, medicinal and operative. Many writers report cures possible only after prolonged non-use of the voice, although it is rather bold to rely upon this alone. Rest of the organ will naturally have a real and beneficial influence upon the laryngitis which forms the basis of the nodules, but I have never seen it exercise the slightest influence upon the nodules themselves.

I include under the head of medicinal treatment, insufflation and spraying, astringent or antiseptic, applications of solutions of nitrate of silver, and above all cauterization with pure or mitigated nitrate of silver or chromic acid, which is applied with a series of ingenious instruments devised for this purpose. All these means are inefficient if not harmful. The active material

diffuses itself beyond the desired limits and may cause an acute inflammation whose duration and extent cannot be foreseen.

The operative treatment, therefore, is the most satisfactory, and no distinction in this regard should be made, whether one prefers the simple ablation or galvano-caustic destruction. As a general rule it is not wise to use instruments which act like a punch on account of the risk of cutting off what is not desirable to remove, and injuring subjacent tissues, and thereby compromising the singing voice. Preference should therefore be given to very fine and delicate forceps, like those of Schmidt or Jurasz, or those which I have recommended for years and which act from before backwards as well as laterally.

We need not fear to remove the nodule in its entirety at its base. When we consider the brilliant success of Professor Labus, who recommends flaying (*scorticamento*) of the cord, there is no reason to fear that we may pass beyond the limit of the disease.

The galvano-caustic treatment should be reserved for those cases where the growth is so small that it cannot be seized between the blades of the forceps or to equalize the edges of the cord after an insufficient extraction. Recurrences are possible. The best means of preventing this is to insist on vigorous hygiene. After the operation absolute silence should be enjoined for some time and singing should be avoided for at least a month. An absolute change of method, register or teacher may be necessary. Finally, it is wise to spend a time at Ems, Mont-Dore or Luchon.

#### V.—MISCELLANEOUS.

##### **The Effect of Dust on the Upper Respiratory Tract.**

LANGMAID, M. D., SAMUEL W., Boston. (*Boston Med. and Surg. Journal*, August 2, 1900.) The constant attrition of the surface of the macadam streets of cities and large towns produces large quantities of fine dust only partially kept down by the watering carts. Inhalation of this dust causes swelling and abrasion of the nasal mucous membrane. This plague of dust is most in evidence in November and March, when high winds prevail. All

throat affections are intensified by dust. The remedy is in improved pavements. *Richards.*

**Treatment of Whooping Cough.**

COGGESHALL, M. D., HENRY (*New York Med. News*, March 31, 1900.) In children over three years of age the author has had good results from the following treatment: cocaineize the nasal mucous membrane with spray followed by cotton-tipped probes wet with the solution, then apply a 2 to 4 per cent. solution of nitrate of silver to nose and naso pharynx, to be followed by a mild alkaline or antiseptic wash. *Richards.*

**The Relation of Diseases of the Nose and Throat to Life Expectancy.**

INGALLS, FLETCHER, M. D., Chicago. (*Philadelphia Med. Journal*, May 12, 1900.) The author does not think that the routine examination of the nose and throat would help the examiner; although there are a limited number of cases when such knowledge would enable him to reject applicants otherwise supposed to be eligible. These examinations should be made whenever there is any reason to suspect pulmonary, cardiac or syphilitic diseases. *Richards.*

**Indications for Constitutional Treatment of Catarrhal Affections of the Upper Air Passages.**

WELLS, WALTER A., M. D., Washington. (*Medical Record*, April 21, 1900.) Dyspeptic disorders, scrofula, hysteria, neurohyperkinesia, the sympathetic diathesis, and neurasthenia are considered. In all of them the constitutional conditions should be looked after as carefully as the local. In some of these disorders the local condition even though the most complained of is a secondary one.

Suggestions as to the treatment are given. *Richards.*

SOCIETY PROCEEDINGS.—SIXTH ANNUAL MEETING OF THE AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY, PHILADELPHIA, MAY 31, JUNE 1 AND 2, 1900.

**President's Address,**

BY DR. D. BRADEN KYLE.

He made a plea for more general medicine in specialism and expressed the opinion that chemical pathology would soon take as important a place in teaching as pathologic anatomy and histology. During the past winter he said that he had seen many cases of the grip. He was of the opinion that there was as distinct pathologic alterations in this disease as in diphtheria, though they varied greatly with the age and with the individual. He believed that during the inflammatory attack there exudes into the perivascular tissue a peculiar material not unlike that deposited in amyloid disease. In the majority of cases alteratives gave the best results. There was abundant evidence to show that this disease exhibited a strong predilection for the accessory cavities. Transillumination had proved very valuable in this class of cases, though, owing to individual alterations in the shape, thickness and configuration of the walls of these cavities, it could not be considered a means of making a positive diagnosis. Laryngeal tumors had received more consideration in the past year than heretofore, and the method of operating described by Dr. W. W. Keen seemed to him an ideal one. The treatment of diphtheria seemed to have remained about the same, the administration of antitoxin and the local use of Loeffler's solution. For operations on adenoids he had found oxygen-chloroform anesthesia simple and convenient. The oxygen is passed through a wash bottle containing the chloroform. Turbinectomy, one of the latest fads, was an operation that had been discarded almost as speedily as it had come into prominence.

**Blunt Dissector and Knife for Tonsillar Abscess. Paracentesis Knife.\***

DR. NORVAL PIERCE, Chicago. The writer exhibited a blunt dissector for opening peritonsillar abscesses. The knife is for the initial incision where that seems necessary, but it is rarely needed. Having reached the abscess cavity, the blades of the dissector are separated, thus favoring the escape of pus.

The third instrument presented was a peculiar bayonet shaped paracentesis knife with a curved blade having a notch in which the tympanic membrane is caught. With this instrument the membrane can be taken out readily without the use of any other instrument. The curve of the knife and the notch tend to prevent the wounding of the posterior wall of the tympanic cavity.

**Fibromyxomata of the Nose.**

DR. M. D. LEDERMAN, New York. The essayist presents a mass of very large fibromyxomata removed from a young girl who came to him complaining of nasal catarrh. Four of them had been removed at one sitting, and three at another, by using a cold snare. There had been but little bleeding although the operation had been done before suprarenal extract had come into vogue.

**A Plea for an Early Operation in Bilateral Abductor Paralysis.**

WILSON. DR. N. L., Elizabeth, N. J. The object of this paper was to show the seriousness of this class of cases. The first case reported was that of a male syphilitic who had had trachetomy performed, and who died a few months later from pneumonia.

Another case had come under his care in July, 1896. This patient was a man, forty-two years of age, having a negative family history. There was an indefinite history of syphilis, and he used alcohol rather immoderately. His voice was a little husky. The urinary examination was negative. The epiglottis and mucous membrane of the larynx were normal. The diagnosis of bilateral abductor paralysis was made, and the man was warned of the necessity of calling for medical aid hastily if there was any more trouble in his breathing. At the time he positively refused operation. The speaker said he had

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\*See ANNALS OF OTOTOLOGY, RHINOLOGY AND LARYNGOLOGY, May, 1900, page 176.



been summoned three months later, and had found the man dead in his office. Inquiry showed that he had been suddenly seized with an attack of dyspnea in the street, and had died almost immediately. No autopsy was permitted.

The speaker said he had since that time thought that intubation or the removal of part or all of one vocal band might have appealed to this man and have secured his consent. Ziemssen had reported six cases, only one of which had improved under electrical treatment. Lennox Browne says that the only case relieved by electrical treatment was the one treated by von Ziemssen, and as the case was lost sight of, the ultimate result was unknown.

Cases had been reported by various observers in which death had ensued before the operation could be done. As far as he had been able to ascertain there had been 118 cases reported. The paper gave a tabulated account of thirty cases. Of the 14 operated upon, ten recovered, one died, and three were lost sight of. Of the remaining thirteen, seven recovered, three died and three were lost sight of. Four of the seven were neurasthenics and should not be classed with the cases of true paralysis of the abductors.

DR. OTTO JOACHIM, of New Orleans, added another case to those collected. The patient on coming to him had already been tracheotomized, and was wearing an aluminium tube which was almost worn out. He had made a laryngeal section, and removed both vocal cords. This had been done without much difficulty. He had kept the man under observation until he was able to breathe for half a day with the tracheotomy tube closed. In that condition he had left the hospital, and had not been seen since.

DR. ARTHUR G. ROOT, of Albany, N. Y., said that he had recently seen one of these cases. The patient was a man, about thirty years of age, who had had some difficulty with his breathing for the previous two weeks. The man was found to be suffering from intense inspiratory dyspnea, and examination of the larynx showed bilateral abductor paralysis. He had advised the immediate removal of the patient to hospital, stating the serious nature of the case, but the man had positively refused to

go. However, early the next morning he had gone to the hospital, and had been tracheotomized, and was still wearing the tube. The cause of the condition appeared to be enlargement of the mediastinal glands, probably as a result of syphilis. In this connection he wished to say that tracheotomy was not an operation to be approached lightly as it was sometimes very difficult. In this instance it had been very difficult. The man had been deeply cyanosed for a number of days previously, his neck was thick, and all of the tissues bled very freely. After the insertion of the tube the man had had a slight convulsion, during which the tube had been momentarily dislodged from the trachea. He quite agreed with the author of the paper that tracheotomy was the operation of choice and that it should be done early.

DR. THOMAS H. HALSTEAD, of Syracuse, said that during the past year he had seen two of these cases. One was a male syphilitic, who was taking at the time 500 grains of iodid daily without relief of the dyspnea, which at times became suffocative. Immediate tracheotomy was advised, and agreed to by the patient, but his attending physician so strongly objected that the patient's family had the operation postponed. A few days later the man died suddenly during the night. The other case occurred in a young man without specific history. At the end of two months he recovered under large doses of the iodids and without an operation. In this case the dyspnea was never urgent except on exertion.

DR. ROBERT C. MYLES, of New York City, said that this subject was of serious importance, and the specialist must have the matter settled in his own mind if he would secure that hearty and immediate co-operation on the part of the general practitioner and his patient which is so necessary to success. As to the choice of operation, it was a question between doing tracheotomy and removing a part of the cords. Personally he would favor the performance of tracheotomy first.

DR. M. D. LEDERMANN, of New York City, referred to a case in which there had been a paralysis of one side of the larynx due to a growth of the thyroid. A surgeon had tried the injection of iodine into the gland, and that night the patient had had a violent attack of dyspnea

arising from edema of the larynx. Scarification and the local application of ice had given relief. In another case occurring in a woman, examination had shown at first nothing but slight redness. A few hours later there was marked edema, and examination of the urine showed the presence of a considerable quantity of sugar. This case also recovered, without operation.

DR. FREDERICK C. COBB, of Boston, Mass., spoke of a case in which the diagnosis had lain between paresis of the cords and an ankylosis of the crico-arytenoid joint. The patient had been put on iodid, and admitted to hospital. The condition had become worse, and tracheotomy had been done. Every attempt to pass tubes between the cords had failed. It was important to give these patients a good breathing aperture, and he would therefore like to know the experience of those present regarding the effect of removing the cords in these cases.

DR. J. SOLIS COHEN, of Philadelphia was invited to discuss this subject. He said that the subject had been admirably presented, and there could be no doubt that immediate tracheotomy was the best plan. If this were refused, it was an excellent plan to coax the patient to carry with him a tracheotomy tube, for, in case of an emergency the mere showing of the tube to the physician called in hurriedly would be a means of saving life. He had known of two or three such instances. Intubation has the disadvantage of depriving the patient of his voice, and moreover there was a chance of the tube being coughed out. He had had no experience with the cutting of the vocal bands, but this operation also deprived the patient of his voice for the most part, and there was danger from cicatricial contraction.

**Subglottic Growths, Report of Cases, with Exhibition of Improved Instruments.**

DR. ROBERT C. MYLES, of New York. He said that Mackenzie's original idea was to push the tube of his forceps down instead of pulling the cutting blades up. It was almost impossible to pull and push at the same time in a spasmodic larynx, and hence he had had a tube forceps arranged somewhat after the manner of Grant's instrument. The beak could be adjusted in any direction. By pushing with the end of the finger, the canula is

forced down, thus causing the blades of the instrument to close. It only cuts on one side. In cases of benign growths it was specially desirable that no injury should be done to the healthy parts. He suggested the use of this instrument in cases of subglottic papilloma in children.

One of the cases reported was that of a man who had consulted him in June, 1898. He stated that some of the growths had been removed on two previous occasions. On examination, he had found both ventricular bands, the cords, subglottic space covered with warty growths. He had had no difficulty in excising and removing them with the tube forceps above the cords, but several unsuccessful attempts had been made to remove the subglottic growths with Mackenzie's forceps. He had eventually succeeded by the use of the forceps just exhibited. Another case was that of a woman who had violent spasm of the larynx when treatment was attempted, even after the free application of a strong solution of cocain. Finally after the use of cocain, morphin and potassium bromid, and with the aid of the same forceps, he had succeeded in removing the growths.

DR. WENDELL C. PHILLIPS. said he welcomed any instrument which would favor the removal of these growths, as no instrument that he had used in the past had seemed to him altogether satisfactory. Up to this time Schroetter's tube forceps had seemed to him the best instrument.

DR. PRICE BROWN, of Toronto, referred to one case in which he had used the galvano-cautery on a subglottic growth. The patient had, in addition, an aneurysm of the aorta. The subglottic growth had produced almost complete stenosis. There was also paralysis of the vocal cord. The growth was large, extended much beyond the centre, and was of a red color and had a broad base. He first used cocain very freely, and then instructed the man to continue breathing so as not to contract the opposite vocal cord. He next passed the galvanic electrode on to the growth, singed it deeply, and took out the instruments. This was all that was done at the first sitting. To his surprise this did not produce edema. At intervals of one, two or three days the cauterization was repeated. The man was completely relieved, owing to the destruction of this fibroid growth and had no return of his trouble

up to the time of his death, four months later, from the aneurysm. The most important point was to insist upon the patient's breathing constantly so as not to contract the cord during operation.

**The History of a Case of Carcinoma of the Larynx.**

DR. JOSEPH S. GIBB, Philadelphia. The patient was a man who, about two years and a half before coming under examination, had begun to suffer from hoarseness. In August, 1899, after a severe coughing spell, a gristly substance had been discharged from the throat, followed by spitting of blood. The difficult breathing and hoarseness had reappeared in about two weeks, associated with spitting of blood.

When first seen, about Nov. 1st, 1899, the laryngeal mucous membrane was found to be unusually vascular, and there was a warty new growth encroaching somewhat upon the lumen of the larynx. Just above the true cord was a warty mass, which fell over and closed the opening on inspiration. The unusual vascularity led him to suspect malignancy, so pieces were removed and submitted to the pathologist. The latter reported the growth as probably syphilitic, but he would not exclude malignancy. The patient had been put on full doses of the iodids, but from time to time portions of the growth were removed and submitted for examination. Eventually unmistakable evidence of malignancy had been found. The final diagnosis was squamous epithelioma of the larynx. The growth recurred rapidly after having been removed, though the patient's general condition was unusually good. A specimen of the growth was submitted to another pathologist, who confirmed the former diagnosis.

On March 15th, Dr. G. G. Davis had performed total extirpation of the larynx, under local anesthesia with eucain B. The larynx was removed from below upward, and from the left side toward the right, careful hemostasis being observed. The parts were painted with an ethereal solution of iodoform and benzoin. The man had left the operating table in good condition. He was placed in a room having a temperature of 80° F., and the air was kept moist by steam. His temperature gradually rose after the operation until his death on the fifth day. The tugging on the treachea had caused the cutting out of some of the

sutures. There was at no time any evidence of bronchopneumonia. The postmortem examination revealed intense congestion of the trachea, but no evidence of pneumonia. The wound from the hyoid bone to the trachea healed primarily, with the exception of one small fistula.

From the cultures made it seemed evident that the patient died of streptococcus infection. Dr. Davis thought this had come from the sloughing carcinomatous area in the larynx and septic absorption prior to operation. From the experience in this operation Dr. Davis expressed himself as in favor of doing a preliminary tracheotomy. Cultures from the heart, blood, spleen and lungs were pure cultures of the streptococcus. The growth was a squamous epithelioma containing numerous papillary outgrowths. It had apparently originated from the vocal cords. The speaker thought the selection of total extirpation was a good one, but believed that trachea should have been fixed by a preliminary tracheotomy. He agreed with Dr. Davis that it was improbable that the infection had been introduced from without.

RICHARDS, DR. GEORGE L., of Fall River, Mass., said that at the meeting of the society at Pittsburg two years ago he had raised the question of the difficulty of making the differential diagnosis between carcinoma and syphilis at times. The case that he had reported at that time had illustrated this difficulty. The man had improved under the use of large doses of iodid of potassium. The fragments removed had been too small for a satisfactory microscopic examination. The patient's life had been prolonged by the tracheotomy.

After death the larynx had shown a most extensive involvement by a slowly extending almost dermoid carcinoma. This explained the difficulty of making the diagnosis. Total extirpation had not been attempted because of the involvement of the esophagus. It seemed to him that the operation was not to be thought of unless one could be reasonably sure that the area of carcinomatous tissue was comparatively small, and that the operation was done sufficiently early. If one could not be sure on these points he thought it preferable to do a tracheotomy and make the patient comfortable for the remainder of his days.

DR. E. L. VANSANT, of Philadelphia, said that he had seen the case reported by Dr. Gibb, and could confirm all that had been said by him concerning it.

ROOT, DR. ARTHUR G., of Albany, thanked the author for his candor in presenting this paper. The few isolated cases reported seemed to show that the total extirpation of the larynx could be done and the patient still survive, but a careful review of the literature seem to warrant one in doing a tracheotomy and allowing the patient to get along as comfortably as he could. Where the larynx was put at rest in this manner, the malignant process quieted down, and life was probably as much prolonged as by any other method. There was reason to doubt whether the infection had arisen in the manner suggested. He thought it would have been much better to keep the patient on rectal feeding instead of allowing him to take any fluid by mouth. Personally, he had much faith in washing out the rectum and using large saline injections. In this way a patient could get along very well for several days with absolutely no nourishment by the mouth.

DR. WENDELL C. PHILLIPS, said that from his own experience and observation he felt sure that patients would live longer if nothing more than a tracheotomy were done in the advanced cases. He referred to a case (which had been published) in which there was a small growth occupying only one-third of the vocal cord. He had thought it to be a simple papilloma, but following his invariable rule to have all growths examined microscopically, the pathologist had reported it to be a carcinoma. At the time of operation there had been no glandular enlargement, so that it was one of the few cases coming to the laryngologist in the primary stage. The man had nearly died of septic pneumonia in spite of careful nursing. He had eventually recovered from the operation and had now survived it a little over three years, with no sign of recurrence. Advanced cases of malignant growths of the larynx should be left alone in the present state of our operative technique. If only tracheotomy were done the patients rarely suffered.

DR. NORVAL H. PIERCE, of Chicago, said that he had had three cases of carcinoma of the larynx. All had been operated by extirpation of the larynx, all had died within

nine days. One important lesson to be learned from the paper was that positive reliance could not always be placed on microscopic examinations of parts removed from the surface of growths. For the removal of deeper portions Schroetter had devised a special instrument. He knew of a case of carcinoma occurring in the practice of a colleague, originating in the vocal cord, which had been removed by laryngo-fissure. The region around the carcinoma had been excised. This occurred over a year ago, and the patient was known to have been alive three months ago, with no recurrence. Most of these patients died of aseptic pneumonia; the next most frequent cause of death was general sepsis. This is not surprising when it is remembered that the mouth cavity, or the lower portion of the pharynx was necessarily opened and the infectious secretions from the mouth could not be kept from the wound. The tugging on the trachea was remediable by an improved technique. The cause of the tugging was obscure: it might be due to the weight of the lungs. The technique of laryngo-fissure and extirpation of the larynx is improving, and the mortality diminishing, so that one should not speak too sweepingly concerning the non-advisability of operating.

DR. R. C. MILES, said that he had studied with renewed interest the subject of extirpation in laryngeal operations for many years. The statistics were certainly not very flattering. It should be remembered that life was not worth much to a person affected with a malignant tumor of the larynx. In the case he presented before the American Medical Association in Philadelphia, the result had been rather disappointing. When seen a year or more after operation he had been in excellent shape. After a time he had developed vomiting, gastric distress and other evidence of a malignant growth of the pylorus, and had eventually wasted away and died. He believed that if the operation on the larynx had been done a few months earlier, this man would have been permanently cured. He would protest unreservedly against these late operations.

DR. LEWIS C. KLINE, Indianapolis, Ind., said that he had been interested in Dr. Miles' case, and was glad to hear the ultimate result. At that time the speaker said he had taken the ground that if he had been the patient he



would have preferred to be let alone. He could recall six cases of carcinoma of the larynx. On one occasion a physician had nearly suffocated in his office. He was taken to the hospital, a tracheotomy performed within a few hours. This was intended as an operation preliminary to opening the larynx, but nothing further was done. The patient returned to his home and finally died. In the other cases he had advised against operation, and he believed this was the best plan in such advanced cases.

DR. OTTO JOACHIM, New Orleans, said that it was only too true that laryngologists rarely saw the early cases, but he had had an opportunity of seeing such a case in the person of a colleague. There had been no difficulty in this instance in making the diagnosis. The patient, had on his advice, been operated upon, and had made an excellent recovery. The disease had never recurred in this locality, but he had died about two years later from metastasis.

DR. GIBB, in closing, said that he was sorry to see American surgeons so pessimistic when our German brethren were so enthusiastic about the operation. He himself did not feel quite so enthusiastic as formerly. Sendziak had collected 108 cases of total extirpation. In 24 the result was perfect. The shortest period without recurrence being three years, and the longest eight years. There were eleven cases of partially good results, i. e., those in which a sufficient time had not elapsed to eliminate the possibility of recurrence. It should be stated, however, that there was a mortality of 72.2 per cent.

He prefers laryngectomy because tracheotomy offers only a brief respite—the disease goes on. Laryngectomy to be sure takes desperate chances but gives the patient a possibility of complete cure and if unsuccessful terminates the case quickly.

#### **Suprarenal Extract in the Treatment of Nasal Hydrorrhea.**

DR. BERNARD BERENS, of Philadelphia, Pa. Locally the sensitive area on the left middle turbinate in the case reported had been cauterized and the parts sprayed with benzoinol and iodine. A 4 per cent. solution of cocaine was given for the patient to use at night, or when the flow was more profuse. On January 9th a fresh solution of suprarenal extract was applied with cotton and allowed to re-

main ten minutes, and the local and general treatment was discontinued, five-grain tablets of the extract being ordered instead to be taken internally at intervals of three hours. After the third dose the discharge had ceased entirely. The flow stopped in a few days, and the extract was discontinued. The flow having returned in about three weeks, the use of the remedy was resumed, with the result that the discharge ceased, and has not returned since that time. It was possible that the remedy acted on the vasomotor centres in the medulla.

The author took the view advocated by Bosworth, that nasal hydrorrhea is the result of a neurosis of the fifth nerve. The frequent absence of albumen and sugar in the fluid discharged in the case of hydrorrhea was one point in favor of its not being cerebrospinal fluid; another was the enormous quantity of fluid voided. Moreover, there was no anatomic ground for the establishment of a flow between the subarachnoid space and the nasal chamber.

LINHART, DR. C. P., of Columbus, O., said he was reminded of a case seen in a young man. This person had used about one dozen handkerchiefs daily for three months previously, beginning with a severe cold, and growing slowly worse. After trying various local applications without benefit, he had made use of a spray of Dobell's solution with a dram of the suprarenal extract to the ounce. Within three days the discharge had been reduced to such an extent that only two or three handkerchiefs were used daily. There seemed to be more fluid discharged from the side on which the turbinal was the more swollen. After four or five weeks of this treatment the discharge had ceased. It was expected that it would return during the winter, and it had done so but had been promptly checked by the same application.

DR. SARGENT F. SNOW, Syracuse, said that he had seen a few of these cases, and they had recovered before the use of the suprarenal extract. He was in accord with the author in his argument that this discharge was not cerebro-spinal fluid. He had no routine treatment for these cases, treating each one according to the special local conditions found. He had had probably ten cases of well marked hydrorrhea, four very profuse, and they had all recovered by attention to the nasal and ehtmoidal drainage.

DR. M. D. LEDERMAN, New York, said that in the recent literature on this subject he had found that the character of the discharge had been described more particularly with reference to its action upon the linen handkerchief, and the presence of a "reducing" substance.

DR. WENDELL C. PHILLIPS, said that he was not altogether clear as to just what was meant by nasal hydrorrhea, but he had had a case which might come under that head. A young society woman had sought his advice because of a troublesome watery nasal discharge. Examination showed all of the tissues waterlogged. He had made the diagnosis of abscess of the septum, and had incised the latter, but no pus had been evacuated—only fluid. Moreover, this treatment had done no good whatever. There was little in her general condition to excite suspicion except the tendency to gout. Finally, in desperation he had instructed her to use a powder blower containing suprarenal extract. This was used at night, and gave prompt relief. After a few days of this treatment she recovered. This method of using the extract seemed to him the most efficient except in those individuals in whom the powder is irritating.

DR. LEDERMAN said regarding the irritation produced by the powdered suprarenal extract, that he had induced, in a medical friend by this application, a most profuse and irritating nasal discharge, which had lasted for forty-eight hours, and had been associated with a temperature of 101° F. When administering it internally it should be combined with some stimulant to avoid cardiac depression.

DR. MYLES said he had been using the powder for about three years, and had met with only few cases exhibiting this irritative action, probably not more than one in twenty or thirty. There were such persons, however, and the effect on them was certainly dreadful. He had often thought that the constitutional and local effect of this remedy might be influenced by the individual's suprarenal gland. He usually tested the individual case by applying powdered suprarenal extract with a swab to the turbinal. If it whitened the part quickly the result of such treatment would usually be found satisfactory.

DR. BERENS, in closing, expressed regret that the differential diagnosis had not been brought out more clearly.

He had been astonished to learn from the discussion that nasal hydrorrhea is so frequent, and that it is such a curable disease. A distinguishing point between a nasal hydrorrhea and a discharge of cerebro-spinal fluid was in the reduction of sugar. The digitalin had been administered in his case merely to increase the general tone.

**Nasal and Postnasal Synechia.**

DR. PRICE BROWN, Toronto, Can. Attention was directed to the fact, that a not insignificant proportion of these cases have their origin in measures carried out by rhinologists. A synechia was described as a bony, cartilaginous, or fibrous band unnaturally connecting together the opposite walls of a cavity. The most frequent form was between the middle turbinal and the septum, and the next most frequent between the inferior turbinal and the septum but they might also occur between the inferior turbinal and the external wall or between the two turbinal bodies. Most of the synechiae are of a fibrous character, the result of union or abraded surfaces. The predisposition to the formation of such bands might be congenital, but the exciting cause was a direct, or indirect traumatism. By indirect traumatism he meant simple abrasion of the surface by forcible blowing, or from abrasion of the surface in other ways. By direct traumatism was meant physical injury, either surgical or accidental.

The use of the galvano-cautery was perhaps the most frequent cause, though he was not one of those who desired to share in the present fashionable wholesale condemnation of the electro-cautery. The reasons for this cautery so often producing synechiae were: (1) The heating of the opposite wall by the cautery, and (2) the tendency for edema to occur after the use of this cautery. Another cause was hypertrophy of the middle turbinal, and the union of the abraded and congested contiguous parts, followed by shrinkage of the turbinal body, the connecting ligamentous link remaining intact.

In the postpharynx, the pathology and etiology were quite similar to what they were in the nasal cavities. The synechiae here were almost invariably fibrous. Careless or ineffectual removal of adenoids may readily cause these synechiae. The most frequent cause in the naso-pharynx was, in his opinion, indirect traumatism. He had found

the saw the most useful instrument of osseous synechiae. To keep the parts open he had used cotton wool tampons soaked in albolene and liked this material much better than gauze. The parts were kept free from discharge by being sprayed with albolene two or three times a day. Where the space is small, and the synechiae likewise small, a small sharp hook could be used to serve and remove them. The tampons should be allowed to remain undisturbed for two or three days. Absorbent cotton could be kept in the nose for a week or ten days without becoming offensive if sprays of one of the hydrocarbon oils were employed.

#### **Nasal Synechia.**

DR. M. D. LEDERMAN, of New York. He divided nasal adhesions into: (1) Congenital, (2) acquired, and the latter into, (a) catarrhal, (b) traumatic, and (c) those resulting from disease of an infectious nature. Myles had recorded a case of the congenital variety in which the trouble had been in the posterior third of the nasal cavity; also a case in which the synechia extended from the middle turbinal down to the floor of the nose and backward from the vestibule along the nasal floor.

In the acquired form, catarrhal disturbances of the mucous membrane probably accounted for those cases in which the nose had escaped mechanical or chemical irritation. Where there was a tendency to repeated engorgement of the turbinal one could easily imagine how a connecting band might form, and how it might exist without causing much discomfort. The class of cases most frequently seen were those forms of atresia resulting from the use of the cautery or the application of various chemical agents.

In catarrhal cases, before operation benefit might be derived from the use of the cinchonidia group, or by the use of some modification of Lugol's solution, followed, if necessary, by a mentholated benzoin spray. It should not be forgotten that lithemic subjects react badly to the use of the cautery. For sometime he had adopted Gleitsmann's suggestion to rub trichloroacetic acid into the cautery wound, and when this is done there is usually less reaction.

The method of removing the turbinal obstruction before dealing with the septum was of service in some instances.

For keeping the services apart he found surgical sponge or "spunk" of the soft elastic variety, a useful material. He had been in the habit of covering the nasal plug with nosophen powder. Care must be taken not to bruise the tissues when introducing the plug, as in this way synechia might be produced. The more rapid the healing process the less the liability to secondary occlusion. When the subjective symptoms were not pronounced, it was well to leave the nose alone except for the use of some antiseptic spray. Roe had found that adhesions were not apt to appear if one side only was touched with the galvano-cautery in cutting away the band. The extensive removal of the surrounding structures was to be depreciated. A small sheet of celluloid would be found useful as a nasal separator. Some operators prefer the use of hard rubber perforated drainage tube, which can be bent to the proper shape by immersion into hot water. Bernays' sponge had recently secured many advocates for this purpose, but he had found the surgical spunk entirely satisfactory. Where the adhesions were extensive and osseous, the chisel and rongeur might be required, and the after treatment must be long and persistent in order to prevent union of the opposing surfaces.

DR. SARGENT F. SNOW believed with Dr. Brown, that the galvano-cautery had its uses, although it had been greatly abused. In his opinion, there were almost unquestionably two elements engaged in the production of nasal synechia—either a bulging or a thickened septum, lessening the normal space, or there was an engorged turbinate. If the septal deformities were removed, the result would be good, but in some cases it was difficult to make their removal thorough. In cases in which there was not too much deflection he was in the habit of turning up the membrane, making a three cornered flap, and cutting out a portion of the cartilage. Myles' cutting forceps would be found useful for this purpose. By taking out a little button-hole from the cartilage and turning the flap down he had secured the desired space without interfering with the integrity of the septum. An engorged turbinate was the result of a local irritant or of some systemic disturbance. In treating these cases it was his custom to advise the patient to take more exercise, and to give remedies which

stimulate the activity of the liver. He never used orthopedic appliances in the nasal cavities with the exception, in rare instances, of a plug to control hemorrhage. Since he had given attention to the general health, securing sufficient space and avoiding irritative treatment, his results had been decidedly better.

DR. J. A. STUCKEY, Lexington, Ky., asked if either the essayists had noticed marked constitutional disturbance following the operation for the removal of synechia. In his practice, there had been more constitutional disturbance following this procedure than almost any other nasal operation. So marked was this reaction that he seldom operated on these cases now unless they were in hospitals.

DR. FREDERICK C. COBB, Boston, Mass., said that he had made use of all sorts of splints in these troublesome cases, and had finally come to the conclusion that synechia were the result of the surface being too close to each other; hence the obvious indication was to separate them. Even in the case of ligamentous synechia if one took a trephine cutting on both sides, and use it once, it was only necessary to pass a probe at intervals of a few days to secure a good result without recurrence.

DR. GEORGE L. RICHARDS said that for small synechia he had been in the habit of using a Teat cutting forceps with rather wide blades. The most satisfactory synechia to treat were those in which sufficient space could be secured by the first operation without resorting to orthopedic appliances, as stated by Dr. Snow.

DR. FREDERICK T. ROGERS, Providence, referred to a method that had given him much satisfaction. A fresh piece of egg membrane can be placed between the raw surfaces for a period of five days without causing any offensive discharge. It was useful in ulcer cases.

DR. L. C. CLINE, said he could not recall having seen a single case of synechia which he could attribute to the galvano-cautery, and he thought the criticisms directed against the use of this instrument were unnecessarily harsh. He believed that when one operated, enough of the turbinal body or septum should be removed to give sufficient space. The application of chromic acid or of nitrate of silver should be sufficient if the space were made large enough at the time of the operation.

DR. JOSEPH A. WHITE, Richmond, Va., said that as long as he could get an instrument above the synechia, it was always possible to get it below that then he had no trouble in removing sufficient tissue. By subsequent packing or by the introduction of the gutta percha tissue employed by dentists the parts could be kept apart. This latter material was better than celluloid because it could be readily moulded, and it was equally clean. The cases that particularly worried him were those with dense, osseous adhesions high up between the middle turbinal and the ethmoid plate. He had known them to be of almost ivory like density so that the electric saw had failed to cut through them. He was not disposed to cut from below for fear of doing damage. He had made use of the burr and drill many times, but the osseous band seemed to keep building up until a thick bony mass had formed.

DR. MYLES said that several years ago he had reported a number of cases of synechia of the Eustachian tube to the basilar process to the American Otological Society. The operation when done with the finger was often most satisfactory in its results. It was easily performed under cocain anesthesia, using the index finger. It had been his misfortune to meet with several cases of synechia in the nose resulting either from syphilis or from active and persistent efforts on the part of rhinologists to plow through, or saw out parts of the ethmoid bone and of the middle turbinate. He had seen more or less complete adhesion of ethmoid bone to the septum. One might cut away the ethmoid bone up to the cribriform plate, when attempting to relieve the condition, and yet the result would not be good. These patients were almost invariably neurasthenic and disposed to complain. The blocking up of the secretions leave these patients in almost a state of constant suffering. With regard to synechia of the inferior turbinal, the point was to separate the parts sufficiently either by excision or moving the walls. One naturally desires to move the septum far enough away, but the vomer here offers an obstacle.

DR. EMMA MUSSON, Philadelphia, said that Dr. H. B. Douglass had recently shown that the galvano-cautery point should be used at a dull red heat until it had penetrated beyond the epithelial and hyalin membranes, as



that microscopic examination had shown that the cautery was peculiarly destructive to the hyalin membrane, and that unless this precaution was observed we would have as a result a broad superficial cicatrix. May not this expensive destruction of the epithelium and hyalin membranes account for some of the cases of nasal synechia?

DR. PRICE BROWN, in closing, laid great stress on the importance of leaving the nasal plug in the nose undisturbed for a considerable period. He preferred cotton wool and made the plug very small. In the upper region it was highly important to keep the mucous membrane in normal state. One advantage of the rubber sheeting was that it is elastic, and after having been placed in position exerts constant outward pressure. He had not observed any special systemic disturbance in these cases, probably because he was careful to employ a very small plug, and so not interfere with drainage. Whenever there was a narrow passage it was desirable to avoid entirely the use of the galvano-cautery. Whenever a tampon is used and retained in position for any length of time, it is important to keep the case under observation, and to insist on regular cleansing above and below the plug.

DR. LEDERMAN said there could be no doubt about the tendency of the osseous synechia in the upper region to reunite, and the attempts to treat them were not free from danger. It was here that constitutional disturbance was apt to occur. If he found a puffy turbinate and much catarrhal secretion he postponed operation until the mucous membrane could be made more healthy. Many authorities make use of Warburg's tincture as a general tonic in such cases.

**Some Remarks on the Etiology of Retropharyngeal Abscess  
With Report of Cases.**

DR. M. R. WARD, Pittsburg. Two cases were reported. The first was a child of two and a half years in whom the trouble had begun on March 1st after exposure to cold. The head was held rigidly and inclined to the right, and the voice was muffled. Pain was referred to the right ear. Inspection of the throat showed acute pharyngitis, but no posterior swelling was noted. Examination of the ear showed acute otitis media. The temperature was 103° F. When seen again five days later he had noted a retro-

pharyngeal abscess, and had opened it immediately. During the following night there had been a profuse discharge of pus from the right ear. The child made a good recovery.

The second case was a child of six months, having a good family history. The illness had begun on March 6th with symptoms of influenza, the disease from which one of the children in the family was suffering at the time. Inspection showed marked congestion of the pharynx. The head was held rigidly, and slightly turned to the right. Although he was on the lookout for retropharyngeal abscess the other case was at the time under observation, he had been unable to make the diagnosis for five or six days. Great difficulty in swallowing was noticed, and the child refused to suckle. The tongue seemed to be kept in almost constant motion in such a manner that the fluid gravitated forward. On the sixth day a swelling was noticed on the right side externally under the sternomastoid muscle, and digital exploration showed a retropharyngeal abscess. Owing to the peculiar movement of the tongue it was found impossible to open the abscess with the bistoury, so he accomplished it by placing the child's head over his knee, and opening the abscess with the finger nail.

One foreign observer, in the course of a residence of 26 years in a children's hospital had seen 203 cases, which he classified as follows: Idiopathic, 179; scarlet fever, 9; measles, 1; caries of the vertebrae, 7; abscess of the neck, 7; and traumatism, 1. It was peculiarly a disease of infancy, and the deep posterior cervical glands were usually at fault. It was not right, however, to consider such a large proportion as primary or idiopathic. He regretted that no bacteriologic study had been made of the cases reported in this paper.

DR. RICHARDS, said that although he had practiced medicine 14 years he had met his first case of retropharyngeal abscess only two months ago. The child had been brought to his office by a physician with the statement that the case was urgent. Examination showed a considerable swelling at the base of the tongue, and to the right of the median line. On digital examination he felt a slight but tense swelling. He had inverted the child

and opened the abscess with his finger nail, a considerable quantity of pus being evacuated. For a few minutes it had been difficult to get the child to breathe, but it had made a rapid recovery.

DR. C. W. RICHARDSON, Washington, D. C., said that he had seen three cases of retro-pharyngeal abscess in children, two of which had been relieved by operative intervention. About six or eight years ago he had seen, in consultation, a child who had a swelling in the neck for a week or ten days. It was supposed to be an inflamed tonsil or an enlarged lymphatic gland. The breathing was very stridulous and the condition of the little patient extremely bad. Examination had convinced him of the presence of pus, and on passing the finger into the pharynx he had detected an enormous swelling extending toward the middle line down as far as the epiglottis. The child stopped breathing at the moment of making the examination, and the father in alarm snatched the little one and ran into another room. The child was heard to cry and gasp, and although he was ordered to bring the child back, he did not do so for a minute or two, and then it was found that the child was dead. This emphasized the advisability in these cases of long standing or explaining to the family the possibility of sudden death supervening at the examination or during the operative intervention. There had been no special difficulty either about the diagnosis or treatment of the other two cases. It was difficult to inspect the pharynx of an infant under one year old, and hence these cases were often not diagnosed at first. In most cases the origin of the trouble was in suppuration of the deep cervical lymphatic glands.

DR. N. L. WILSON, Elizabeth, N. J., said that he had seen two cases recently. One of them had presented an enormous swelling, the child having been suffering for three weeks before coming to him. The abscess had been quickly opened with a bistoury, and recovery ensued. The other case had been sent into hospital for diagnosis, and he had failed at first to make the diagnosis. The child had been kept under examination for two weeks, and had then been referred to a general medical practitioner who had made the diagnosis. The child had then returned to him, and the nature of the trouble had been made clear.

In this instance the abscess had originated in tubercular caries of the spine.

DR. N. H. PIERCE said that he had seen two cases. One of them was a child less than one year old, seen at the Post Graduate Hospital. The child was extremely emaciated from inability to nurse, and was on the point of suffocation. For a moment he had been puzzled over the case, for there had been no circumscribed swelling or redness, yet inspection had given him the impression of a foreshortening of the buccal cavity. The whole posterior pharyngeal wall was pushed forward. On digital examination he had detected slight fluctuation, and he had then made the diagnosis. The ignorant parents would not then consent to operation, but some days later they allowed him to operate. The opening was made externally. At that time the internal swelling was very large, and he thought it was conservative to estimate the quantity of pus evacuated at over four ounces. The tube was displaced in the dressing, causing another accumulation of pus, whereupon all the distressing symptoms again appeared. The child recovered rapidly after re-establishing drainage. In this case there was no vertebral caries.

DR. F. C. COBB said that he had had two cases of retropharyngeal abscess at the hospital. In one of these nothing could be seen in the pharynx because of the large quantity of mucous accumulated there. On palpation, one could feel a solid mass on the pharyngeal wall, but neither he nor other physicians present could detect any fluctuation for four or five days. The symptoms had grown slowly worse during this time, and, of course, immediate relief had been afforded by incision. It was well to examine with the finger quite low down.

DR. E. E. HOLT, Portland, Me., said that when there was any swelling in the neck, whether the ear had been manifestly involved or not he made it a point to carefully examine the external ear. If he found the posterior superior part of the canal red and sensitive to the touch he had found almost invariably that the mastoid was involved. He cited a case in which the tonsils and pharynx were extensively inflamed and the swelling in the neck was thought to be due to the inflammation in

the throat, but upon examining the ear and finding that the canal was inflamed and sensitive in the posterior and superior part he gave it as his opinion that the mastoid was involved, although there was no external manifestations of inflammation of the mastoid. The patient was in a critical condition and he was asked to operate and did so, finding the mastoid broken down and a perforation into the digastric fossa and into the lateral sinus. The patient made an uninterrupted recovery.

DR. THOMAS H. FARRELL, Utica, N. Y., cited a case in which a large swelling had been found on the left side behind the posterior pillar of the fauces. The two pillars were crowded together so that at first sight the swelling looked like an enlarged tonsil. An incision had been made, but it had been necessary subsequently to enlarge the opening to secure proper drainage.

CHAMBERS, DR. T. R., Jersey City, said he had seen only yesterday a little child with what he suspected to be a postpharyngeal abscess. The only symptom was a peculiar crowing breathing associated with cyanosis on awakening out of sleep. The patient was an infant of about nine months. Palpation was unsatisfactory, and caused marked cyanosis and difficult breathing. No swelling could be appreciated.

DR. WARD, in closing, said that he had endeavored to show that the disease was more frequent than generally supposed, and one met with more often by the general practitioner than the specialist. It seemed to him rather strange that an infection of this kind of the deep lymphatic glands should so seldom tend to retropharyngeal abscess. He saw no good reason for resorting to the more formidable external operation.

**Some of the More Common forms of Defective Speech with  
Exhibition of Cases.**

DR. G. HUDSON MAKUEN, Philadelphia. He defined voice to be "a column of breath set in vibration by its own impact with the vocal bands and re-enforced by its diffusion through the various resonant chambers into the surrounding atmosphere." It was his belief that the persons who stammer do so for the most part because they have not an adequate column of breath properly controlled

at the time they desire to speak, and that the trouble in the majority of these cases lies in the respiratory mechanism.

The diaphragm is well known to be an important respiratory muscle, and the text books put it down as an inspiratory muscle. He personally believed that for the purposes of speaking and singing the diaphragm is a purely expiratory muscle. He had endeavored to show that the diaphragm should always be contracted or in a state of tension when the column of air was being used for the formation of voice. He therefore taught his pupils to contract the diaphragm during the emission of vocalized breath.

The speaker here presented a young man who had been coming to his clinic for about two years. When first seen he had been unable to articulate so as to be understood by any one. When seventeen months old he had suffered from marasmus and he was unable to walk for five years. When first seen at the clinic he was nineteen years old, and he could not speak a single intelligible word. The muscles of his mouth and face were at that time in a state of almost constant tremor. He had been taught to use the organs of articulation in the formation of the various sounds and to control the breath by the proper use of the respiratory muscles, with special emphasis placed upon the use of the diaphragm, as described above; and he was now able to speak quite distinctly though slowly and monotonously, and with some effort. He had been taught to use the syllabic method of articulation in order to properly train his muscles. In time he will be able to talk smoothly and easily.

DR. MAKUEN said that he had treated children as young as six years. He exhibited three girls who were being trained. He stated that stammering is a disorder of both the muscles and the nerves, but by muscle training the nervous system would also be trained.

#### **Dentigenous Cysts of the Superior Maxilla.**

DR. FREDERICK COBB, Boston, Mass. He said that in such persons the upper jaw is distended and as hard as bone. The location of the swelling is usually at the side of the nose, and examination of the nostril sometimes shows a bulging of the outer wall of the vestibule outward and upward. Sometimes the sinus could be seen running

upward into the swelling. The usual symptoms were slow swelling of the face, without suffering except perhaps a slight pain about the roots of the teeth. On the sound side the transmission of light below the organ is better than on the other side.

On inserting a canula into the tumor a brownish fluid escapes, and if by means of a syringe fluid is injected it escapes around the trocar. After evacuation of the cyst, and its consequent collapse a sharp bony prominence, representing the roof of the cyst, would become apparent. His own cases had contained no teeth. It was important to determine the condition of the teeth entering the cyst. The bony opening in the cyst should be packed until granulation had become well established. He thought these cysts started in an inflammatory process originating around the diseased teeth, and characterized by excessive secretion. Some of the cases had come to him with a diagnosis of antrum disease. The salient points in the treatment were evacuation of the cyst and careful dental treatment.

#### **Cornu Cutaneum Auris.**

DR. JOHN C. LESTER, Brooklyn, N. Y. The case was reported because of the extreme rarity of horny excrescences of the skin. In this case the growth had been attached to the middle and outer portions of the pinna. He had failed to find in dermatologic literature any reference to tumors of this nature attached to any portion of the external ear. Such growths are rarely found except on the face and on the penis.

The growth in this case was single. They were more common in advanced age, and in males rather than in the opposite sex.

The case reported was that of a man, fifty-eight years of age, who about six months before coming under observation, had noticed a small pimple on the external border of the left ear. There was no history of traumatism or of constitutional taint. Attached to the upper half of the left ear was a horny excrescence, a little over  $1\frac{1}{4}$  inch in length and about one inch in width at its base. Its shape resembled that of a pyramid slightly twisted upon itself with the apex toward the head. Near the base it was spongy. Almost the entire cartilaginous portion of the

ear was practically ossified. The growth unexpectedly came away en masse with the hardened matrix of the plaster cast. The hemorrhage was so severe as to necessitate the use of ligatures and the immediate closure of the wound by several sutures. The attachment was cauterized with nitric acid. Recovery was uneventful. The points of interest were, the anatomic location and the history of severe freezing of the auricle, the age and sex of the patient, the severe hemorrhage following removal, the ossification of the auricle, and the permanency of the recovery.

**A Report of Three Cases of Ligation of the Internal Jugular for Septic Thrombosis Following Purulent Otitis Media. Recovery.**

DR. E. B. DENCH, New York. The majority of these cases terminate fatally unless relieved by the surgeon. In the past fifteen years the means of recognizing the condition had become better and the technique had also greatly improved. Three cases were reported.

DR. WILSON said that in the first operation of this character in which he had assisted the operator had taken four hours and a half to do the operation. He had since that time done the operation himself in an hour and a half.

DR. DENCH replied that in the first case the operation had required between  $2\frac{1}{4}$  and  $2\frac{1}{2}$  hours; the second and third,  $1\frac{3}{4}$  hours each.

DR. OTTO JOACHIM thought the excellent results achieved in the cases reported in the paper were largely owing to the early stage at which the operations had been done.

DR. DENCH was of the opinion that the secret of success was in making early diagnosis and resorting to immediate operation. The history of sinus thrombosis seemed to him about as characteristic as any other condition met with. There were the typical rise and fall of temperature. One should be able to make a positive diagnosis after watching a case for forty-eight hours.

**GENERAL DISCUSSION UPON ADENOIDS.**

**Anesthesia in Children with Adenoids and in Adenoids Operation.**

DR. J. H. HALSTEAD. He said that children with adenoids presented two distinct conditions, viz., (1) the



lymphatic diathesis, manifesting itself locally in the nasopharynx, and (2) the constitutional results of mouth breathing. Children of this diathesis and children who are compelled to breathe through the mouth because of adenoids are affected not merely locally in the nose, throat and ear, but every tissue, every cell and every organ in the body is impaired by deficient oxygenation of the blood. Impaired lungs, cerebrum and heart are almost of necessity, a result.

He believed in the complete removal of the adenoids whenever a removal is called for, because remnants tend to enlarge and cause a recurrence of symptoms rather than atrophy and shrink as was believed to be the case a few years ago.

Under twelve years of age as a rule, a general anesthetic should be administered because the operation in itself is exceedingly painful, and the great amount of shock caused by the pain, fright and blood is such that irreparable damage may be done to the nervous system of a sensitive child. Not only this, which is an important consideration, but still more important is the difficulty in removing all the growth without a general anesthetic.

As to the anesthetic to be employed, he stated his belief that instead of being a safe anesthetic in childhood, chloroform was peculiarly dangerous in this period of life because so many children are of the lymphatic diathesis, the very condition which was found present by Kolisko on the postmortem table of persons killed by chloroform when the heart, lungs and kidneys were in an apparently normal condition. Children with adenoids, of all others, present the most favorable conditions for the dangerous effects of chloroform. Operating during primary chloroform anesthesia was the most favorable time for a fatal result because here there are combined the great heart depressants chloroform, fear, shock and pain, any one of which may be sufficient to produce cardiac failure.

Statistics as to death from chloroform, ether or any anesthetic are unreliable, physicians refusing to report these cases. The author reported a fatal case from chloroform in the adenoid operation and stated that he could find but one other case, that of Wishart, reported during the past two years, or since Hinkel reported his case and col-

lected the cases up to that time. So far as they go, however, statistics are all favorable to the view that chloroform is, in general surgery, from three to seven times as fatal as ether. and the author thought that children of the lymphatic diathesis, or those with adenoids, were peculiarly susceptible to the depressant effects of chloroform. He had had no experience with ethyl chlorid, feeling that the objections to chloroform were equally applicable to ethyl chlorid, an anesthetic in many respects like chloroform and, from the number of deaths reported, not a harmless one. Nitrous oxide was too evanescent to permit of a satisfactory adenoid and tonsil operation.

All things considered he thought the best anesthetic was ether. Primary ether anesthesia was often all that was required but where a longer operation was to be expected the third stage should be reached. Expertness in operating should be cultivated but not at the expense of thoroughness. Ether, as compared with chloroform, has many disadvantages but they can be largely minimized or diminished by a good anesthetizer. As a rule, ether is badly or indifferently administered, few physicians being good anesthetizers. The author said he was lately in the habit of giving atropin hypodermically to children over seven, and often under this age, in order to diminish the excessive mucus secretion in the throat and lower respiratory passages and with an almost uniformly excellent result. On a few occasions he thought that possibly the dryness of the mucous membrane interfered with the expulsion of the blood and what mucus it secreted.

He was, also of late, in the habit of anesthetizing the nasal mucous membrane by applying with a cotton swab, a few drops of a five or ten per cent. solution of cocain. He never sprayed the cocain but always used a fine nasal applicator with a small cotton swab, not more than two or three drops of the solution being required. This was gently and quickly passed into both nostrils and over the mucous membrane. This was done on the theory of Laborde that nausea and vomiting caused by ether or chloroform is through the irritation of the peripheral branches of the trigeminal nerves which, when irritated by chloroform or ether, cause a reflex stimulation of the pneumogastric and inhibitory respiratory center in the

medulla. The nerve endings, deadened by cocain, are not irritated and consequently nausea and vomiting are diminished and the struggling and suffocation lessened to a marked degree. In the past six months the author's experience with this has been most satisfactory.

In children above twelve and fourteen years of age, he is in the habit of operating more often under cocain anesthesia than under general anesthesia, because at this age the patient commonly prefers the pain and a second operation to the disagreeable effects of a general anesthesia.

**From the Standpoint of Hemorrhage.**

DR. IRVING E. KIMBALL. In 350 adenoid operations done in twelve years, he had not seen either primary or secondary hemorrhage of sufficient gravity to give anxiety. In all but four of the cases ether had been the anesthetic employed. Unfortunately this immunity from hemorrhage had not been the experience of all. The modern methods of doing this operation were perhaps responsible for the increasing tendency to undo hemorrhage. He was inclined to think this was because an effort was made to do the operation hurriedly. In the early years of his experience it had not been uncommon to take thirty minutes for the operation. No one instrument would always be sufficient. The forceps were not to be despised. Careful inquiry should be made into any family hemorrhagic tendency. The patient should be kept in bed and under observation for twenty-four or forty-eight hours after the operation. It was also well to keep the patient under one's immediate observation for a short time after operating.

**From the Standpoint of Histology.**

DR. NORVAL H. PIERCE, Chicago. Adenoids are hyperplasia of tissues normally present. This hyperplasia should only be looked upon as pathologic when it interfered with the functions of the other parts or itself became secondarily diseased. These growths are of two great varieties, the diffuse and the stalactite. The surface may be either coarsely granular or nearly smooth, or more or less fissured. The ciliated columnar epithelium is cuboid or pavement shaped in places owing to pressure. Beneath this epithelium is a delicate basal membrane.

The principal part of the mass is composed of lymphoid

nodes identical with the solitary follicles of the intestine, and a reticulum holding together these nodes together with follicles which open on the free surface of the mucosa. Subsequently the lymphoid nodes become atrophied by pressure from contraction of the maturing embryonic connective tissues. These growths were frequently affected by tuberculosis and other infections.

**From the Standpoint of Pathology.**

DR. CHARLES W. RICHARDSON, Washington, D. C. Adenoids may be classified into two groups, viz., (1) a hard or fibrous type, and (2) a soft or gelatinous type. The consistency seemed not to depend so much upon the age of the patient as upon the character of the histologic elements. The most frequent situation is in the vault just at the pharynx. He had never met with these growths around the orifices of the Eustachian tubes. The growths are composed of delicate connective tissue rich in lymphoid cells and blood vessels.

By collecting the cases from the literature it had been found that 45 out of 905 cases, or about 5 per cent., showed tubercular invasion. It could not be denied that in children of a certain type there was a strong tendency to the development of adenoids, and it was probable that this was the last evidence of some constitutional vice, such as syphilis, tuberculosis, or the result of an ill-assorted marriage.

**From the Standpoint of Operative Procedures.**

DR. JOSEPH A. WHITE, Richmond, Va. He said that he had operated a good many hundred times himself, and yet no matter what method he had adopted he never felt satisfied that he had thoroughly removed all of the growths. So long as bleeding followed gentle use of probe the space was not free of adenoids.

Some adenoid growths resemble a bunch of worms, some are conical with apex down; others are flat and cushioned shaped, and keep up a constant discharge of mucus; others still are composed of two lobes with a deep fissure separating them. He could not see how the forceps could be discarded entirely. While the curette was the main reliance, no curette could clean out the space completely, particularly the masses on the sides in the vicinity of the Eustachian tubes. For the removal of these he used the forceps.

He was in the habit of operating under general anesthesia in children, though doing so with fear and trembling. He was accustomed to use a palatal retractor of his own devising, and while this was in position he examined the space thoroughly before doing an operation. This was entirely feasible in children over five years of age; for younger ones he had to depend solely upon the examination with his finger. It was ordinarily possible in adults to see the vault satisfactorily; but there were many cases in which such a view could not be obtained without the use of this device. It had been invaluable to him and to others who had learned to use it. His experience had been that it was necessary to be trained to use this little instrument to advantage. The instrument was exhibited.

It had been his experience that where the operation was not thoroughly done the patient would be annoyed afterward with considerable discharge in the pharynx. He had seen one operator do marvelous work in the post-nasal space with the snare; but personally he could not do this, and indeed the majority of operators depended upon the curette, using also the forceps. Occasionally he had made use of the galvano-cautery to remove small fragments not easily removed in any other way. Without anesthesia the only position was with the patient sitting in front of the operator. When anesthesia was employed, the child was anesthetized with the head down. As soon as under the influence of the anesthetic he inserted the mouth gag, the child's head hanging over the chair. He was so afraid of general anesthesia in children that he operated under cocain alone whenever possible, and rarely used profound general anesthesia.

**From the Stand Point of After-Treatment.**

DR. FREDERICK C. COBB, Boston. If the operation was thoroughly and carefully done there was seldom any sepsis. It was generally sufficient to keep the child quiet for a day or two. He had occasionally noticed that the operation had started up an old middle ear disease. He had tried at one time sprays to keep the parts clean after operation, but they had been abandoned, feeling that with a proper technique they were unnecessary. He had only once been called upon to treat hemorrhage, and in that case the bleeding had subsided under the use of simple

astringent sprays applied to the nose and naso-pharynx. It had come on three days after the operation.

DR. A. G. ROOT, said that in young children, particularly if there was any disorder of the kidney, he preferred chloroform. Deaths from chloroform anesthesia were but little understood. It was assumed by those who had studied this subject that the deaths that had occurred from chloroform anesthesia were probably the result of an enlarged thymus gland. The exact pathology was, however, not well understood. It was often necessary to keep the tongue well forward, yet the application of forceps to the tongue seemed to him simply barbarous. It was much better to pass a stout ligature through the tongue, as this gave complete control, did not leave the tongue sore afterward, and did not inflict traumatism which might eventually lead to the development of epithelioma. He was one of those who believed the forceps could not be discarded. An instrument which had not been mentioned in this discussion was one called an adenotome, and, in his hands, it had proved of considerable value. It was easily used, and would sometimes take the place of the forceps. It seemed to him that septic conditions were liable to follow invasion of the post nasal space, and hence, an effort should be made to keep this part clean.

DR. PRICE BROWN expressed his faith in chloroform, never having used ether in these cases. In using chloroform there was a certain definite small rate of mortality. In a practice extending over a quarter of a century he had not seen a fatal case from chloroform, and while it might occur to him at any time such an accident would only have the effect of making him more careful in its administration. This anesthetic should be administered drop by drop. In two instances he had seen serious effects from pouring somewhat larger quantities on the napkin at a time. Regarding instruments, he would say that he never uses the forceps, finding that he can accomplish the desired result by the proper use of curettes of various sizes and of the requisite sharpness. In the side spaces he could remove the fragments easily with his finger nail. He had at one time tried a forceps, but had been disappointed with its action.

DR. RICHARDS thought the selection of instruments and

of position for operating was a matter of individuality. Personally he always operated with the patient in the sitting position and with ether as the anesthetic. He recalled one instance in which most alarming symptoms had followed the administration of chloroform in the hands of a skilled anesthetist, and it was not likely that he would employ this anesthetic agent again.

DR. W. C. PHILLIPS said that he had always considered cocain exceedingly dangerous in young children, and he would hesitate a long time before using it in such cases; hence it was only adding to one's troubles to go from chloroform to cocain. He was surprised that Dr. White used the forceps for his final work; in New York City the practice was to use the forceps in the first stage of the operation and finish up with the curette. He did not think the position of the patient was a matter of any importance, probably no one in the room ever seen death from inhaling blood. He never thought of lowering the patient's head to prevent blood from going into the trachea, and believed if the blood went down it passed into the stomach and not into the trachea.

DR. F. H. KOYLE, Hornsville, N. Y., said that he had frequently made use of the A C E mixture instead of either chloroform or ether, using an Esmarch inhaler. It had all the advantages of chloroform and of ether, and none of the disadvantages of either of these anesthetics. The chief danger from chloroform lay in the fact, that it was usually administered by those who had not sufficient experience with it. It should be administered by the drop method, the patient if old enough, being instructed to count, and with each count one drop of chloroform being given with the Esmarch inhaler. He did not approve of the use of either the tongue forceps or of the ligature passed through the tongue. It was an easy matter for the assistant to keep the jaw well forward by the thumbs placed behind the angles of the jaw.

DR. LEWIS C. CLINE, Indianapolis, thought the selection of the anesthetic and the instrument was a matter chiefly of early teaching and individual experience. It had been his misfortune to see a healthy child of five years die from the use of cocain in the hands of another practitioner. The worst experiences he had ever had were in three

cases, and in each of these it had been with the first few inhalations of chloroform. He had been severely criticised for advocating the removal of adenoids without anesthesia, but he believed it was right. The child was firmly held, and he took plenty of time in operating. He had frequently resorted to the method of removing adenoids piecemeal in both children and adults, and his patients had come back again and had the operation repeated until finished.

DR. THOMAS HARRIS, New York, thought it hard to reconcile some of the discordant views expressed concerning anesthetics. Speaking for the Manhattan Eye and Ear Hospital, of New York, he would say that ether was generally employed, and there had been no fatal case from it certainly in the last ten years. He had operated on quite a number of very young children, had had one fatal result. In this case an infant was recovering from pneumonia and there seemed to be so much obstruction to breathing that he had removed with the finger nail as much adenoid tissue as possible without giving an anesthetic. The child had been temporarily relieved, but had died thirty-six hours later, apparently from some meningeal complication. No autopsy was permitted. At one time he had advocated operation only when there was much adenoid tissue present, but to-day he believed it should be removed whenever there was sufficient material of this kind present to be recognized. This was especially necessary from the standpoint of the aurist. English aurists were in the habit now of making an application of iodine or other astringent to the naso-pharynx after the operation. They thought it tended to prevent a recurrence.

DR. M. D. LEDERMAN recalled two or three cases in which, relying upon examination of the postnasal space with the mirror, he had decided that there was little or no adenoid tissue so that he believed the finger was the better guide. Within the past six months he had come to use chloroform, though formerly he had made use of the A C E mixture. He operated with the child in the recumbent posture when chloroform was used without letting the head hang down. He had never thought it necessary to resort to profound anesthesia. He began with the forceps, and



followed this with the curette and the finger. Where there was a roughness of the vault after the operation, it was certainly well to apply a solution of iodin.

DR. R. C. MYLES said that at the last meeting he had had occasion to remark upon the danger of drawing deductions and conclusions from personal experience alone because in comparison with the grand total individual experience must sink into insignificance. Having had a fatal case from anesthesia he had learned privately of a number of other fatalities—so many as to show conclusively that statistics on this subject are absolutely false and unreliable.

His patient, a man of 37 years of age, was suffering from nasal stenosis and a large mass of lymphoid tissue in the rhinopharynx. The patient was compelled to sleep sitting up in a chair. Several attempts were made to remove the growths under cocain anesthesia, but the patient resisted so violently that the operator was forced to discontinue his efforts. The patient was apprehensive and extremely nervous. An expert gave nitrous oxide gas, which the patient took very badly, then ether was employed. The anesthetist failed to get him thoroughly under the influence of ether, as the patient would become very dark and purple and cease to breathe. The patient was placed, face downward over the edge of a table, a gag was introduced and the forceps were rapidly introduced, two or three times and withdrawn with pieces of tissue from the rhino-pharynx. Hemorrhage was moderate. The patient suddenly stopped breathing and became completely relaxed. Tracheotomy was performed, artificial respiration and oxygen gas were employed diligently for more than an hour without any revivifying effect.

He knew of an institution in which a great many adenoid operations were done on children, and done very rapidly without anesthesia, by the use of a specially devised antero-posterior cutting curette, sharpened specially for each operation. He knew of no other instrument that would remove such large masses from the nasopharynx. Any one who is not expert both with the forceps and with his left forefinger should not introduce forceps into the rhinopharynx. If the forceps were used without the guidance of the finger, and pieces were removed and then examined with the microscope, it would be found that

many of these fragments of tissue should have been allowed to remain in their natural position.

DR. SARGENT F. SNOW, Syracuse, said that he had used the bromid of ethyl in 15 cases, and with results that had pleased him. The desired anesthesia had been induced, and the patients had been awakened promptly, so that they could spit out the blood. He used a small quantity of the bromide of ethyl, six to eight drams, taken out of a hermetically sealed tube.

DR. S. MACCUEN SMITH, Philadelphia, said he had used bromid of ethyl in two or three cases, and in each one it had been necessary to perform artificial respiration. The anesthetic had been administered by a gentleman familiar with its use, and he had given it for Dr. Montgomery, on whose recommendation Dr. Smith had tried it. He had had some experience with anesthesia induced by the passage of oxygen gas through chloroform. So far as he had observed its effects, they had been excellent. The color of the patient improves under its action, and it is followed by very little nausea. The chief objection to the method was the expense.

DR. T. R. CHAMBERS, Jersey City, said that he had found five per cent. of the cases among children did not require anesthesia at all. Chloroform should be administered with a mixture of tact and time. It takes about fifteen minutes to get a child properly under the influence of chloroform, minimizing properly the fear and shock. Chloroform was the only anesthetic that he employed in these cases, and he gave it to the point just beyond what is described as surgical anesthesia.

DR. HALSTEAD, in closing, said that Dr. Myles had well covered the ground of the lack of value to be placed on statistics of fatalities from anesthetics. He knew, through verbal communication, of more deaths from chloroform in this operation than were recorded in all American literature. He believed that an operation of any kind should never be done under primary chloroform anesthesia as it was in this stage that most deaths occurred—probably because of the pain and fright added to the chloroform. To operate under chloroform in the upright or semi-upright position was, by all, recognized as placing the patient in the most favorable condition to succumb to

the chloroform. He had no fear of the slight amount of cocain used in the nose preparatory to giving ether. The amount was exceedingly small, not comparable with the amount used in doing the smallest operation under cocain, and the ether would offset any possible ill effects of the cocain. One speaker said the adenoid operation was not a painful one under a local anesthetic. He entirely dissented from this, believing it to be one of the most painful operations which we are called upon to do, and thought the speaker must have hypnotized his patients if they experienced no pain.

DR. WHITE said that he kept the patient's head down not merely to get rid of the blood but because he was using chloroform. If he were using ether he would put the patient in the erect posture.

**The Abortive Treatment of Acute Mastoiditis in Children and Adults.**

DR. J. F. MCKERNON, New York City. He had tried dry heat in ten cases, four of them being children. The heat had been applied by means of the hot water passing through the Leiter coil. He had found that the tenderness had been but slightly diminished, but on substituting ice water for the hot water the tenderness had quickly subsided. The ten cases were not selected, but were taken as they presented. He had since used the hot water treatment in 14 other cases, and if anything the results had been even less favorable.

The treatment he advised was to enlarge the opening in the drum, if sufficient drainage had not been secured by nature, and in addition where there was marked swelling or prolapse of the superior and posterior canal walls he used what some had described as "internal Wild's incision." Absolute rest is enjoined, and the ice-coil is applied firmly to the mastoid process and bound in place. The ear is irrigated at intervals of two to three hours with warm bichlorid solution 1:4000. If after twenty-four hours of such treatment the tenderness over the mastoid had not almost entirely disappeared, the cold coil is reapplied again for twelve hours more. The majority of these cases could be discharged cured within a week. In a very small percentage the tenderness would persist after the thirty-six hours, and then if the temperature were less than 100° F., he

would reapply the coil for another period of twelve hours. If there was still no improvement, the classical mastoid operation should be done.

As a rule, in children under three years of age, the ice coil should not be applied after thirty-six hours, but if the tenderness had not subsided in a few hours after its removal the mastoid should be operated upon. He was of the opinion that if the discharge was examined bacteriologically at an early stage it would possibly serve as a trustworthy guide in making the prognosis. If streptococci were present in abundance, 80 per cent. of the cases would ultimately require operation. Thus, in a series of 57 cases of acute mastoiditis examined in this way, 42 showed streptococci in abundance, and of this number 39 required operation.

DR. W. C. PHILLIPS said that he did not feel like condemning heat so strongly as had the reader of the paper. The physician's duty was to decide whether or not the case was well advanced. He could not say that hot applications were better than cold ones, though perhaps safer. He felt quite sure one of his cases had died from the result of a too prolonged application of the ice coil at too late a stage of the disease. It seemed to mask the symptoms. He was disposed to confine the use of the ice coil to twenty-four hours, or at most thirty-six hours. He had made it a rule for some time past to have a bacteriologic examination made of the discharge. This year streptococci had been present in every instance, and sometimes also pneumococci and staphylococci. The ice coil has a tendency to mask the symptoms, and this should be given careful consideration, particularly by the inexperienced. He made it an invariable rule not to reapply the ice coil.

DR. CHAMBERS said that during the past few months he had studied bacteriologically 58 cases of mastoid disease, 30 of which had gone on to operation. He felt that in the other 28 he had aborted the disease by the injection of water at a temperature of 120° F. into the auditory canal. Some of his patients had stated that they had used the water at a temperature of 130° F., and with increased comfort. He used the hot water douche through the ear douche with outlet pipe at intervals of an hour for two or

three days and followed it for fifteen minutes by an application of ice, and for another fifteen minutes by the hot water bag, and then started again with the hot water douche. In 12 per cent. of the cases, Fraenkel's pneumonia bacillus had been present. In a number of instances, paracentesis of the drum had been performed one or more times. The cases showing the pneumonia bacillus had been most easily controlled. If streptococci were present, the opening in the drum was cauterized with chromic acid, if the germ was Fraenkel's bacillus a pepsin treatment always; in every case where it could be thoroughly employed promptly stopped the discharge.

DR. JOSEPH S. GIBB said that according to his observation cases of acute mastoiditis are prompt in developing and usually demand active and energetic treatment for their relief. He was equally sure that prompt abortive measures in a certain proportion of cases is rewarded by good results.

Too often, these cases are overlooked or treated lightly by the medical attendant until unmistakable evidences of suppuration leaves the surgeon nothing to do but to open the mastoid and to evacuate the pus. The experience he has gained in the wards of the Episcopal Hospital where his attention is called to the cases early has convinced him that much may be done of an abortive nature. We have in this hospital constantly a large number of cases of typhoid fever and ear complications have been unusually prevalent especially within the past two years. He has seen several very severe cases of acute otitis media in the past winter, and in all of these cases, symptoms of mastoid irritation were present and in a few what would be regarded as unmistakable signs of inflammation were present, and yet, in this group of possibly 8 or 10 cases (he had no record but reports from memory) in but one was it deemed necessary to open the mastoid. One case in particular impressed him with the value of abortive treatment was that of a young girl of twenty who during convalescence from typhoid was suddenly seized with intense pain in the left ear which was quickly followed by profuse purulent discharge from the auditory canal. The discharge gave little or no relief to the pain and very soon the mastoid became boggy, red and exquisitely tender.

The pinna stood out from the head and there was bulging inward of the posterior wall of the auditory canal. So marked were the symptoms that he directed the resident physician to make preparation for opening the mastoid on the day following his visit to the hospital. An urgent call out of the city prevented his reaching the hospital that day so he phoned the resident to have three leeches applied to the mastoid region and to follow this with continuous applications of the ice bag besides, giving some general directions as to the secretion and remarking that he would be there the following day to operate. The next day when he saw the patient there was a marked change in her condition: the inflammatory condition about the mastoid had subsided, the pain had lessened very much and even the discharge from the ear had diminished in quantity. The treatment was continued and in a period of about two weeks there were absolutely no ear symptoms present and the girl departed for her home in Scotland. This case represents cases which he has seen again and again, so that he has come to the belief that we should be somewhat cautious in our advocacy of radical measures, unless there are positive evidences of the presence of pus or symptoms of cerebral complications are present an earnest effort should be made to combat the inflammatory action, by means of leeches, ice or Leiter's coil to the mastoid combined with proper attention to the secretions, e. g., unloading the portal circulation by small doses of mercurials and effecting free diaphoresis and diuresis. Attention should be given to the ear should suppuration be present and free drainage maintained. While this is his firm belief, at the same time he does not believe that these measures should be persisted in too long. Should there be no abatement in the pain in 24 or at the most 48 hours it would certainly be the part of good surgery to cut down on the mastoid and open up the mastoid cells.

DR. M. R. WARD said that he had had considerable experience in the treatment of acute mastoiditis, but he discarded the use of leeches and trusted solely to cold as an abortive measure.

DR. S. F. SNOW said he could not help feeling that many cases of simple inflammation of the mastoid were needlessly operated upon. He had formerly used heat,

but had changed to cold, not that he thought there was so much difference in the results, but because cold was more easily applied. The first indication was to establish free drainage from the tympanic cavity, and if this were attended to it was quite safe, even in the more advanced ones, to await the result of using ice. The only exception was in cases showing symptoms of intracranial complications cerebral disturbance. The heat or cold should be applied uninterruptedly from the beginning to the end of the abortive treatment. It was safe to continue the constant application of ice so long as continued improvement was apparent. He felt more than ever confident on this point from recent experience. If a low temperature of the parts were continuously maintained the production of pus would be lessened.

DR. LEDERMAN thought there could be no doubt that cold applications, properly made, free incision and drainage constituted the proper abortive treatment of this disease. Some cases are more comfortable with hot applications; this is more noticeable in the subacute stage.

DR. E. E. HOLT, Portland, Me., said that he had tried heat but had found that it macerated the tissues and favored their invasion with germs. On the other hand, the cold by making the symptoms was apt to be misleading. Instead of either cold or heat he now made use of the glycerite of carbolic acid and found it better than either of the others. It had the advantage of not masking the symptoms. When there was any marked bulging behind the ear he was in favor of prompt operation and the establishment of good drainage.

DR. L. C. CLINE said that in the early stages the main thing was to secure proper drainage. Calomel and saline purge was perhaps as useful as the application of cold.

DR. R. C. MYLES said that it had been his experience, after making a free incision into the posterior quadrant and into the periosteum, to observe that there was a tendency for the wound to close and interfere with the drainage; he therefore favored not only the straight incision but also a curved or T-shaped incision. In some of the cases he had excised a circular portion of the drum, and these cases had done the best of all. Many of these cases had come under observation last winter, and only a few of them had required operation.

DR. B. ALEX. RANDALL, Philadelphia, was invited to take part in the discussion. He said that he had generally found hot applications quite satisfactory, but moved by Dr. McKernon's comparative tests had recently tried cold. In a series of cases in which there seemed a fighting chance he had made effective use of the cold, yet it had so happened that all of them had required operation. On the other hand, at least a dozen of the apparently unfavorable cases treated by heat had been cured without operation. In the past ten years heat had rendered him valuable assistance in over 600 mastoid cases, cured without operation; while in hardly a dozen had it failed.

DR. L. B. GRADDY, Nashville, said he believed that when the mastoid cells had become infected with pus-producing organism the application of heat or cold could do little if any good in the way of arresting suppuration. He favored the early use of purgatives and the establishment of drainage. He had been particularly pleased with the application of leeches over the antrum, using from two to six leeches according to the age and physical condition of the patient. This application he made invariably if the case was seen early. If, however, infection of the deeper parts had already taken place he operated.

DR. MCKERNON, in closing, thought it was often a fine point to determine when the cold should be applied. When there was an inflammation of the lining membrane of the antrum and cells he believed such treatment did good; he did not expect to stop suppuration that had already taken place. He had tried leeches, but having found in hospital practice infection of the leechbites he had discarded this mode of treatment except occasionally in private practice. All of the streptococcus cases go on to suppuration and abundant formation of pus. He had had no experience with the glycerite of carbolic acid. He believed in free drainage, purgation and absolute rest as the important factors in the early treatment. If a good, free incision were made at first there would be rarely any occasion for a second one.

**A Further Report upon the Use of Pure Carbolic Acid in the Treatment of Mastoid Wounds and Chronic Suppuration of the Middle Ear.**

DR. WENDELL C. PHILLIPS, New York. He said that in his



report on this subject last year he had made use of the carbolic acid treatment devised by Dr. Seneca D. Powell for a period of only three months. Of the six cases reported at that time, all had remained well up to the present. The cases during the past year had been of about the same class as those already reported upon, but he had also used the method on cases of burrowing with pus sacs. He had used the acid freely in these cases and could not say too much of the favorable results obtained. Better results had been obtained by allowing the carbolic acid to remain in contact with the tissues from thirty to sixty seconds before applying the alcohol as an antidote. In not a single one of the pus sac cases had a secondary operation been required.

He never performed an ossiculectomy except in cases which had resisted for a long time the usual methods of treatment. He had seen no ill effect from the carbolic acid treatment in this class of cases and he was inclined to believe a more rapid result had been obtained. It could be applied freely without fear of harm. This treatment had been employed in his service at the Manhattan Eye and Ear Hospital in about 20 cases of mastoid operation. The discharge had been markedly lessened in cases in which other cauterizing agents had failed, and in many instances secondary operation had had been avoided. It had been particularly valuable when used in the ear in the form of a spray.

DR. LEDERMAN said that he had used this treatment in a few cases, and had found very little reaction if the alcohol was promptly applied. When the necrosis was superficial there seemed to be quite a field for the use of this agent.

**An Unusual Case of Traumatic Rupture of the Membrana Tympani.**

DR. GEORGE L. RICHARDS, Fall River, Mass. He said that Randall, in a tabulation of five thousand cases of ear diseases, had found but five cases of traumatic perforation. The case reported was of a fireman, forty-three years of age, who had been struck on the side of the head at short range by a stream from a hose. He had been knocked down and stunned for the time, and in a few hours the ear had begun to discharge. He had

come under observation three days later. The canal was cleansed and iodoform gauze inserted. The man complained chiefly of tinnitus. The rupture appeared to have been the result of sudden compression of the air in external canal rather than by direct impact of the water. A similar case had been observed by him in a mule spinner who had come because of a facial paralysis, with some deafness and tinnitus. He had fallen down three weeks previously, striking the side of the head. The case had yielded readily to treatment. The symptoms most complained of was tinnitus, the loss of hearing being usually not extreme, and only temporary.

HOLT, DR. said he had seen one or two cases of rupture of the membrana tympani from waves striking the head while the person was in bathing. Recently he had seen a case of perforation of the drum membrane occurring in a bicycle rider who had been struck in the ear by a wire hanging down. No other part had been injured.

DR. N. H. PIERCE said that during the bombardment of Santiago a number of sailors had had traumatic perforation of the ear drum, particularly the men working in the turrets. It had been usually accompanied by more or less pain, deafness and tinnitus. Most of these men had been able to return to their work within a week. One of the more protracted cases he had seen recently, and there was a chronic suppuration of the middle ear, which the patient said had not existed before the injury. The treatment had consisted in plugging up the ear with cotton and very carefully abstaining from the use of antiseptics.

#### **A Case of Carcinoma of the Larynx.**

DR. T. H. FARRELL, Utica, N. Y. The speaker presented a man, 54 years of age, who had pain on swallowing for the past three months. During this time he had lost about forty pounds. Examination showed a grayish fungous growth confined to the left side. The true cords were not involved, and the voice was not impaired. On April 29th portions had been removed and submitted to two pathologists for examination, both of whom had reported the growth to be a typical epithelioma.

With the aid of Dr. Jones, a general surgeon, tracheotomy was first done, and then the pharynx opened through the thyrohyoid membrane. The removal of the

growth had been begun from in front. More room for working was obtained by doing a thyrotomy along the median line. Having ligated the attachment of the growth to the pharyngeal wall it had been removed, and then the greatest difficulty had been experienced in bringing together the pharyngeal mucous membrane. During the first three days the respirations had been 30 to 35 per minute, and large quantities of muco-pus had been discharged from the tracheotomy tube. The temperature only once rose much over 99° F. The tracheotomy tube had been left cut on the sixteenth day, and the opening in the tracheotomy allowed to close. On the twenty-sixth day the feeding catheter had been removed and the patient fed with a stomach tube inserted at each feeding.

DR. LEDERMAN thought that as the man was not suffering much it would be better to leave him as he was, avoiding operative interference for the present.

**A Brief Report of A Case of Cerebral Abscess of Otitic Origin.**

RICHARDS, DR. G. L. Fall River Mass. The patient was a man, twenty-eight years of age, seen first on September 16th, 1899. At that time he had had a temperature of 100.4° F., and a perforation of the drum head. On the next day he was perfectly rational and the general condition seemed good. The day following this his temperature being normal and his pulse 76, he was allowed to go home at his own request. He was found late in the evening in a dazed condition in a swamp some distance from his home. He was taken back to the hospital, and on that afternoon the speaker had seen him.

He was absolutely unconscious; the pulse was 104; the right pupil was much dilated, and the whole left side was paralyzed. He had made a probable diagnosis of cerebral abscess, advised operation, and given an unfavorable prognosis.

Ether was given and the mastoid operation done. Not enough being found to account for the man's condition an opening had been made with the trephine at the base of the right middle lobe of the cerebrum and two or more ounces of very foul pus had been evacuated. The cavity was washed out and drainage tube inserted. Four hours after the operation the pulse was 140, respirations 72 and temperature 105° F. He soon developed a severe bron-

chitis, which may have been the result either of the ether or of the exposure in the swamp. The next day the temperature was controlled by antipyrin, and the man became partially conscious. He died on the third day with a temperature of 107.8° F. No autopsy was permitted. Although nearly the whole of the right middle lobe of the brain had been destroyed it was remarkable that the man had been in such apparently good condition that he had been allowed to go out from the hospital, less than 24 hours before being brought back in a state of paralysis and coma.

**Cerebral Abscess Following Chronic Otitis Media; Recovery.**

DR. W. H. DUDLEY, Easton, Pa. The patient was a man, twenty-five years of age, who had been seen on August 16, 1897. When a child he had had an acute suppurative otitis media, and when seen this time had been ill for about one week. He had complained of pain in the left side of the head. His pulse was 56 and his temperature 98.4° F. The ophthalmoscope showed decided optic neuritis on the affected side. There was much rigidity of all the voluntary muscles. Almost all of the mastoid process was removed with a chisel but no pus or dead bone was found. At a point about three fourths of an inch above the bony canal, a trephine opening was made, and a large aspirating needle introduced in various directions into the brain. On reaching inward on a level and backward at an angle of about 45°. at a depth of about two inches, about half an ounce of sero-purulent fluid was withdrawn, and this was examined microscopically. It was found to contain pus, broken down blood cells and granular matter. No more fluid could be obtained, so further operative measures were not considered advisable. He slept well on the night following the operation but was exceedingly unruly so that the task of caring for him for the next four weeks was a difficult one.

During the first two weeks there was hardly any improvement in the mental state. By the twenty-eight day the temperature had reached 99.5° F., and after some rapid oscillations it reached the normal on the thirty-ninth day. By this time his normal mental state had been restored, and it had not changed up to the present time, over two and one-half years. He had not the slightest

recollection of the five or six weeks during which he had been so seriously ill. The collection of fluid must have been in the temporosphenoidal lobe near the posterior horn of the lateral ventricle. The mental state was unlike that ordinarily seen in this class of cases.

DR. J. C. LESTER commended Dr. Richards' paper because it dealt with an operative failure. More could be learned from such contributions than from reports of successes.

**Report of a Case of Granuloma of Prussak's Space Simulating Caries.**

DR. NORVAL H. PIERCE, Chicago. The patient was a farmer, thirty-five years of age, having no specific history. He came complaining of deafness. There was no apparent discharge, no marked pain and no tinnitus. The watch on the right side could be heard at a distance of three inches, and on the left side at three feet. Lying over the short process of the malleus on the right side and to a certain extent obscuring the membrana flaccida was a cauliflower like mass the size of a small pea. He had removed the mass, which was protruded through the membrana flaccida by a small pedicle. He at once thought the case to be one of necrosis of the incus, but his doubts were aroused by the lack of inflammation of the pars tensa of the tympanic membrane and the meagreness of discharge. A probe detected crepitus, but was arrested before reaching the inner wall of the tympanic cavity. Before doing an ossiculectomy he scraped out the tissue through the opening already existing. In the tissue removed he detected gritty particles which, under the microscope, were found to be organic, and soluble in hydrochloric acid. After the scraping he found that he had to deal with Prussak's space. The cavity was packed with a little gauze, and the patient made a good recovery. The membrana flaccida did not re-form over Prussak's space, leaving the cavity exposed to external inspection. The speaker said this was the only case of this peculiar character that he had been able to find recorded. We must always differentiate this condition from true osseous necrosis before ossiculectomy, the two conditions having many points in common.

DR. C. W. RICHARDSON said that the interesting feature

was the calcareous deposit. It was probably the result of irritation from retention of secretion, caused by the presence of the granuloma. Calcareous deposits occurred with exceptional frequency.

DR. PIERCE replied that this was a rather common condition in tympanic membrane, though the cause was not well understood. The case was important because it showed the necessity of differentiating this pathologic condition when occurring within a granuloma, from true necrosis of the ossicles before operating.

**Two Operative Cases of Lateral Sinus Disease of Otitic Origin  
With Jugular Ligation.**

DR. OTTO JOACHIM, New Orleans. The first patient was a white male, twenty-four years of age, who had been admitted to hospital on October 10th. Both ears had given more or less trouble since childhood. The present illness had begun with pain in the head, especially on the right side, malaise, fever and a chill. He was extremely restless, and answered questions slowly and talked at random. There was tenderness over the antrum and a purulent discharge from the ear on the right side. The diagnosis was pyemia of otitic origin. The operation was done on October 12th, and the lateral sinus was laid bare freely. The internal jugular was ligated before division. Both the vein and the sinus were found to be purulent. The operation was very extensive, but the patient survived the immediate shock. The temperature continued between 101° and 104° F. reaching 106° on the third day, while the pulse was between 88 and 100. The wounds were opened on the third day, and the lower one was found distended with pus. Cleansing the parts did not control pyemia. On the sixth day a thorough search was made for the pyemic focus, but without success, and the man died on October 24th. At the autopsy numerous metastatic abscesses were found in the lungs, and the right lung showed a pneumonic process. The right lateral sinus was found thrombosed, and a few drops of pus were discovered in the sigmoid sinus. There were extensive pockets of pus in the deeper layers of the neck.

The second patient was a white youth of nineteen years, who had had trouble with the right ear since 1889, marked

by earache and periodic discharges of pus. The present illness had begun with fever and swelling behind the ear four days previously, and he had had chill two days before coming under observation. The temperature was 102° F. and the pulse 120. There was no special tenderness of the mastoid, and the external auditory canal contained but little serous discharge, and having no particular odor. Shortly after admission the boy had had a severe chill and the temperature had risen to 104° F. The next day the temperature was 102° and the swelling seemed to be somewhat larger. He was operated upon at this time in the usual way. The sigmoid sinus was exposed and opened throughout its entire length, and a solid coagulum removed. The internal jugular was irrigated. On the fifth day the dressings were changed for the first time. The general condition of the patient was satisfactory. The upper wound was dry but had a peculiar odor. The speaker said that statistics showed a greater preponderance of recoveries in cases in which the jugular had been ligated. It was worthy of note that complete facial paralysis occurred in spite of precautions to prevent it.

DR. RICHARDSON said that these reports were not only interesting but instructive as affording the necessary data for making an early diagnosis. The danger in these cases was not so much from the formation of a thrombus in the sigmoid sinus as from thrombus lying there day after day until pyemia develops. When there were fever and chill the harm had been done, yet unfortunately this was often the first positive evidence of the existence of a septic thrombosis. He had had under his observation a case from the very start, yet the septic thrombus had formed without any symptoms showing before the chill. The day before this symptom had appeared the patient had had an almost normal temperature, and had seemed to be better than before. The statement has been made that the occurrence of an elevation of temperature after the subsidence of the other symptoms, and in the absence of the retention of pus, should lead one to suspect septic thrombosis. In his opinion, ligation of the internal jugular was the course to pursue in all of these cases. It did not add to the gravity of the case, and prevented the septic infection becoming more general.

DR. N. H. PIERCE said that his experience had led him to believe that the most important symptom in sinus thrombosis were chill and sudden rise of temperature, or sudden fluctuations of temperature. However, within the past month, an otitis media had developed in a young girl after the grip, and just as she was recovering from this an exposure to cold had caused a return of pain in the ear and a muco-serous discharge from the ear. After a few days she had had a series of slight chills, and the temperature suddenly arose from 100° to 105° F. Two other consultants had agreed with him in the diagnosis of septic thrombosis. The next morning the temperature had fallen to 103° and from purely friendly and sentimental reasons he had postpone operation. In another day she had developed the usual evidences of erysipelas about the ear, which explained the chills and temperature, and had made a satisfactory recovery.

DR. N. L. WILSON said that he had seen last winter a case in which pyemia of the joints, the heart, the lungs and the brain had been present, and yet the patient had recovered. The case had been under the care of Dr. Toeplitz.

DR. JOACHIM said that undoubtedly a continued high temperature in these cases was very suspicious of infection of some of the sinuses, yet it did not apply to children, for, in them there might be a very high temperature without any sinus thrombosis. In the adult the tendency to fever was not great. Of the metastatic affections the most favorable were those affecting the joints and the muscles. In some cases recovery had taken place without tying the jugular vein though the lungs had shown metastases. It was, however, the part of prudence to tie the jugular.

#### **A Palate Retractor.**

DR. JOSEPH A. WHITE, Richmond, Va. The speaker exhibited his palate retractor, and explained the proper method of using it. He had never seen a case from 10 years of age upon which he could not use the instrument. He also exhibited a convenient handle that he had devised for use with the cold snare, the hot snare and for various other purposes. He likewise exhibited his electric saw, a direct acting instrument which would not stop even though



pressure were made. An improved scissors and a half retaining tongue depressor were also exhibited.

**A Brief Report of a Case of Tic Douloureux.**

DR. F. H. KOYLE, Hornesville, N. Y. He said that on June 1st, 1897, a woman of forty-eight years had come to him. She had had frequent pain in the right side of the face for fifteen years. In 1896, on different occasions the first bicuspid, the second bicuspid and the canine teeth had been removed, and after each extraction there had been only temporary relief. There was an enormous exostosis on the right side of the nose. On transillumination the right antrum remained dark. An opening was made through the canine fossa, but with negative result. The patient refused to have the exostosis removed. Recalling the fact that there had been hydrorrhea sometimes from one side of the nose, and at other times from the other side, he had been led to suspect a reflex neurosis of ocular origin. Examination of the eyes showed myopic astigmatism and muscular insufficiencies, hyperphoria and esophoria. Her eyes were fitted with glasses and systematic exercises for the weak eye muscles were prescribed. The improvement in the muscular balance was marked, and in this there was diminution in the neuralgic pain. Eventually the muscular balance was made and then the patient was freed from her long standing pain. The ciliary ganglion is the connecting link between the third and fifth nerves, and it was through this ganglion that an irritation in the third nerve had been communicated to the fifth nerve, and had given rise to the neuralgia.

DR. LESTER asked what was the condition of the pupils and also in giving the exercise, was attention paid to the heterophoria.

DR. KOYLE replied that both pupils were apparently normal. In the exercises he had given attention first to the hyperophoria.

**Glandular Complications of Acute Follicular and Acute Suppurative Tonsillitis When Accompanied with Grip.**

DR. WENDELL C. PHILLIPS, New York. During the past spring follicular and tonsillar affections were specially frequent at the time of the prevalence of the grip. In his own cases the deeper glandular structures had been involved, and the inflammation had been very severe. All

of the cases had had the grip, and nearly all had previously had follicular tonsillitis. The history was usually that of the grip with follicular tonsillitis, pain in the neck, extension and rise of temperature. About one-half of the cases had suppurated, and had required operation. In two cases it had been necessary to dissect out the entire gland. Adults seemed to be more frequently affected than children, but age and sex had exerted no influence on the result. Examination of the pus in one case showed numerous long streptococci. No doubt the infection had reached the glands through the lymphatics.

DR. N. L. WILSON said that he had seen several such cases, not only involving the glands, but the sinuses. They had been especially prevalent this winter following the grip.

DR. R. C. MYLES said that this also had been his experience. Apparently it was the result of the attenuated poison of the grip. For some reason this special infection had seemed to penetrate very quickly into the deep lymphatics.

DR. C. W. RICHARDSON said that he had seen only one case of this kind during the past winter, although he had seen an unusually large number of cases of follicular tonsillitis. The infection in Washington had been milder than in previous years.

DR. PRICE BROWN had met with more throat trouble in Toronto the past winter in connection with the grip than usual but cases of suppuration had been no more frequent although glandular enlargement had been very common.

DR. JOACHIM said that in his part of the country tonsillitis had been much more prevalent during the past winter than usual, yet he had not met with any unusual degree of involvement of the deep cervical lymphatic glands. However, other complications, such as acute otitis media, had been remarkably prevalent.

DR. W. H. DALY asked if there had been any deposit on the tonsils, either fibrous or diphtheritic.

DR. PHILLIPS replied in the negative.

DR. W. H. DALY said that the cases that he had seen had been complicated rather with rheumatic conditions. Generous doses of the compound liquor of iodine, both internally and locally, had given him the best results.

The underlying condition seemed to him rather rheumatic than the grip. The grip was credited with doing more harm than was really the case.

DR. J. A. STUCKEY, Lexington, Ky., said that there had been an epidemic of this follicular trouble in Kentucky. He had not been able to ascribe it to the grip. Anti-rheumatic remedies had given good results.

DR. S. MACCUEX SMITH, Philadelphia, said that there had seemed to be rheumatic element in most of the cases that he had seen, and in addition to the follicular condition, there had been some extension to the larynx. His cases had done better under antirheumatic treatment.

DR. L. C. CLINE said that he had observed an unusual number of cases of follicular affection in his part of the country, and an unusual proportion of them had suppurated. Many of his patients had improved promptly under the use of sodium salicylate together with local treatment with guaiacol in full strength.

DR. JOSEPH S. GIBB said that he had seen a number of cases of tonsillitis of the follicular form in Philadelphia but none in which the deep glands had been involved. He had also seen a number of cases in which the sinuses had been involved.

DR. PHILLIPS in closing said that his treatment had consisted in an initial dose of calomel, followed by salol or bicarbonate of soda with enough phenacetin to control the pain.









I

II



III

IV

Fig. I. (Specimen 2) Carious destruction of tegmen tympani and antri, through which the suppurative process reached the meninges.

Fig. II. (Specimen 3) Lateral sinus opened; closed upward and downward by adhesions of walls.

Figs. III and IV. (Specimen 5) Tuberculous destruction of entire tip of petrous pyramid, shown in III.



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XXVI.

MIDDLE EAR DISEASE IN ITS RELATIONSHIP TO  
THE CRANIAL CAVITY.\*

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WITH ABSTRACTS OF FIVE CASES.

EXPLANATORY OF ILLUSTRATIONS

BY CARL BARCK, M. D.,

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In the entire human economy there is not a single cavity which occupies and is of such vital, relative importance to its neighboring structures as that of the middle ear. It bears such important relationship to all which lies about, hidden away as it is deep down in the firmest and hardest

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\*Read before the Twenty-sixth Annual Meeting of the Mississippi Valley Medical Association, Asheville, North Carolina, October, 1900.

bone of the body, that oftentimes it is the very thread from which suspends the sword of Damocles.

Disease in this region means not only deafness, noises in the head, discharge and dizziness, but, when not properly recognized and taken in hand, results in invasion of the cranial cavity and perhaps death. The very fact that it is a small cavity, not readily visible and tucked away in so strongly fortified position, that when disease runs riot within its walls it lays the entire adjacent territory open to infection and invasion, is sufficient reason why more study, more careful analysis and sober consideration should be given to any sign or symptom pertaining to the ear. Only a few years ago the profession was taught to disregard a chronic discharge from the ear, with the admonition that to check it would be dangerous, therefore to let it alone to take care of itself. This idea of the subject took its origin, presumably, from the fact that many cases attended by spontaneous cessation of the discharge became worse and died. As a result of this teaching the laity came to regard a running ear as a most natural state of affairs which, to interfere with or to check by any means, would tend only to complicate matters. Formerly patients had to be satisfied with such advice from their physician, because of an undeveloped state of the profession's knowledge, but the day of such ignorance and omission is past.

A patient suffering from a suppurative affection of the ear demands a more absolute statement as to his condition and is entitled to a clear exposition as to the real dangers he is living under. Any other advice stamps the advisor as a man of antiquated ideas, nonprogressive and of limited ability. Your patient is a more educated man than he was a few years ago, and if you, as his medical advisor, have not kept pace with the march of progress, he has. His taste for the mysteries of scientific subjects has been whetted by an ambitious secular press, by the teachings of the departments for scientific research opened up by our colleges and universities and by the natural evolution for more searching thought by an enlightened public.

It has very pertinently been said that "a man with purulent middle ear disease has a charge of dynamite at the

base of his brain, which is liable to explode at any time.”<sup>1</sup> To confirm the truth of this statement, we have but to look over the various causes of brain infection and abscesses, when we notice that, next to trauma, ear disease is responsible for the greater number of such conditions. Nowadays, with our more perfect understanding of the pathology of these conditions and the thoroughness with which antisepsis and asepsis may be applied, we find it to the salvation of our patient to enter the cranial cavity with the same fearlessness that the surgeon enters the abdomen in cases of strangulated hernia, appendicitis and gunshot wounds. Our first and all time duty is to place every suppurating middle ear trouble on the list of serious diseases. And the longer it exists the more serious it becomes. When you have this fact thoroughly imbedded and firmly fixed within your mind, then you are in a position to recognize the symptoms resulting from its entrance into the cranial cavity, and not call it a case of typhoid fever, or tuberculosis, as is constantly being done. Cases have again and again been reported where sudden death has resulted and where the autopsy has demonstrated a brain abscess as the cause resulting from a chronic ear disease.

Middle ear disease is a much more common affection than is ever thought to be and occurs in many cases where it was never suspected. Especially is this true of infants and children. Ponfick, who performed 100 autopsies on children, found only nine normal ears. Of all the remaining cases only in ten had an ear trouble been diagnosed. The mortality rate from intra-cranial complication resulting from ear disease, as found in 9,000 autopsies from all causes by Newton Pitt at Guy's Hospital in London, was two-thirds of 1 per cent. or 57 cases. Gruber found, out of 40,000 autopsies, 232 cases. As to the age, sex and side of head where lesion appears, the different observers hold divers opinions. The male, on account of his greater liability to exposure, seems to be more often affected. The same reason may account for the more frequent occurrence in the young. But here must also be considered the undeveloped condition of many of the parts. The greater number of otitic intra-cranial complications result from the chronic variety; although the number following close upon acute cases is by no means small. Some au-

thorities seem to deny the truth of this statement. It is said that Von Bergmann is of the opinion that brain abscess never results from an acute otitis. My perusal of the literature does not seem to bear out this statement, for I find numerous such cases reported. Men, like Macewen, Koerner, Schwartze, Toynbee, Meyer, Jansen, Paul Koch, and others have observed like things.

Aside from the abscess condition, we may have a phlebitis, a meningitis, and the formation of a sinus thrombosis, singly or in combination, following the acute or the chronic form of otitis.

#### POINT OF ENTRANCE OF THE DISEASE INTO THE INTERIOR OF THE CRANIUM.

The particular site of entrance through which the invasion takes place is one of the most important matters connected with this subject. It often becomes the subject of greatest importance in seeking the exact locality of the complication; for, from the knowledge of this fact, one is saved a round-about way of operating. It not only helps us to more accurately locate our trouble, but facilitates differentiating between an abscess and sinus disease. As for instance, in case we have a necrosis involving the roof of the tympanum, we might expect as a consequence a phlebitis or thrombosis of the superior petrosal sinus, because this sinus courses along the roof of the middle ear. Under such circumstances we do not at first expect to find disease in the cerebellum. Where we can possibly exclude mastoid disease, the chances are, although not necessarily, that we have to do with trouble in the temporal region. In discussing the various avenues through which disease may enter the cranial cavity, we have but to look at the anatomic landmarks lying about the middle ear. And here, first of all, we would most naturally look along the lines where the various parts of the temporal bone articulate with one another. The petro-squamous and the squamo-mastoid sutures are the important ones. The former is distinctly seen along the superior aspect of the petrous bone. It is always present during childhood and oftentimes in the adult. Along its course is situated the petro-squamosal sinus. This sinus bears particular atten-

tion on account of the importance it plays in fetal life to the intra-cranial circulation. At this time, and before the formation of the jugular vein it acts as the carrier of all the intra-cranial venous blood. Its presence can very often be made out in the adult skull and in children it is almost always present.

Forming the roof of the middle ear we have a very thin lamina of bone, so thin that it is markedly transparent. It is called the tegmen tympani. This thin plate of bone forms at the same time part of the floor of the middle cerebral fossa, and in cases that at times occur, where it is deficient, we have a very ready means of entrance of the infection into the brain tissues; for in such cases nothing but the brain membranes and the mucous membrane lining the middle ear separate the two cavities. Necrosis of the roof of the middle ear is probably the most frequent means of diseases entering the skull cavity. Forming the floor of the middle ear is also a thin plate of bone which separates it from the jugular fossa, in which lies the internal jugular vein. The bone is perforated for the passage of the auricular branch of the vagus nerve, and is at times the site of dehiscences, as in J. A. Andrews' case,<sup>2</sup> where the bony floor had two large openings, the result of arrested development. In such a case the jugular vein would lie in direct contact with the mucous membrane of the tympanum.

Part of the anterior wall of the middle ear is formed by the carotid canal and the thin bone lying between these two cavities is perforated by minute openings for the passage of the tympanic branches of the sympathetic. Posteriorly lies the mastoid antrum and cells and the sigmoid sinus. Between the latter and the middle ear is direct vascular connection, as is also the case between the antrum and cells and the interior of the cranium by the mastoideo-petrosal canal carrying a vein to the superior petrosal sinus.

The facial canal, which courses through the tympanum along its superior posterior wall, is sometimes exposed, either in part or in its entirety.

The inner wall of the middle ear is formed by the outer plate of the petrous bone, containing the two large openings known as the oval and round windows. Hence the

tympanum is separated from the labyrinth only by the membranes covering these openings. The labyrinth has direct communication with the cranial cavity by way of the interior auditory canal. The aqueductus vestibuli also connects the interior of the skull with the labyrinth. From this study of the territory surrounding the middle ear, with its numerous means of communication with the cranial cavity, in one instance by way of a blood channel, in another by way of a lymph or nerve channel and again via a suture or dehiscence, one readily sees with what ease the brain may be complicated in all suppurative forms of otitis media, and why every such case should be considered alone, cautioning your patient of the great danger to which he is subjecting himself by neglecting to have every effort exerted in removing the foci of infection that is lodged somewhere within the various crevices of his middle ear. Diseased and partly necrosed ossicles should be removed, as they interfere with proper drainage. All granulations should be curetted, and polypi snared. Masses of inspissated secretion and cholesteatomatous masses should both carefully be removed.

As to the best method to pursue in this direction, we will not discuss here, as that is not strictly within the province of this paper.

In order to more easily comprehend our subject we will discuss the complication under two main divisions: that of phlebitis and thrombosis and pus collections.

#### PHLEBITIS AND SINUS THROMBOSIS.

Inflammation or occlusion by clot formation of any one or more of the numerous veins and sinuses within the cranium may follow as a complication of acute or chronic suppuration within the middle ear.

In case necrosis of the bone involves only the roof of the middle ear, we may have, on account of its location here, a phlebitis or thrombosis of the superior petrosal sinus. The superior petrosal sinus is the venous channel running along the angle formed by the superior and posterior surfaces of the petrous bone and connects on one end with the cavernous sinus and on the other with the lateral sinus. In its course it traverses the floor of the middle cerebral

fossa or that part forming the roof of the middle ear and antrum. As may be seen from its connection, this sinus may become secondarily involved from extension of a similar disease of the lateral or cavernous sinus. It may also become involved from an infection in the mastoid cells by traveling along the mastoideo-petrosal canal. On account of the very free communication between the lateral sinus and the mastoid antrum and cells by way of the mastoid veins, infection may easily follow this route.

The internal jugular vein may be the site of a phlebitis or thrombosis secondarily to such a condition existing in the lateral sinus. Primarily it may be affected by way of the small foramina in the floor of the middle ear, which transmits the auricular branch of the vagus nerve; or the floor of the tympanum may become necrosed and open directly into the jugular bulb containing the jugular vein; or again, there may be a natural deficiency in the bony floor of the tympanum and the exposed vein would very likely be open to an infection.

It might be appropriate here to mention that a necrosis may extend in such a direction that the case may terminate fatally from hemorrhage by a carious perforation of the carotid canal and ulceration into the carotid artery<sup>3, 4, 5</sup>.

#### SYMPTOMS.

The symptoms of phlebitis and thrombosis of the cerebral vessels vary greatly with the particular sinus or sinuses involved. In common we have symptoms of pyemia; that is to say a sudden and high temperature, accompanied by rigors and perspiration and ultimately metastatic abscesses.

That all these symptoms necessarily exist in every case does not by any means follow. At times they are so insidious in their manifestation that they may escape detection. Some observers<sup>6</sup> think infective sinus thrombosis is more likely to occur where the streptococci are present in the purulent ear secretions than when the staphylococcus alone is there. In the differentiation between the location of the particular sinus, Schwartze<sup>7</sup> says thrombosis and phlebitis of the lateral sinus due to otitis media is diagnosed only when pyemic symptoms are present. Gerhardt

mentions a condition of lesser distention of the jugular vein on the side of the obstructed lateral sinus, but Schwartze has found the opposite condition.

Griesinger and many others believe a painful edema over the mastoid, as a symptom of lateral sinus thrombosis, due to the extension of the clot through the emissary vein, is diagnostic; but this must not be confounded with a swelling of the mastoid region accompanying diseases of the mastoid cells.

If the thrombus in the lateral sinus extends downward to the internal jugular, we have swelling, edema and pain in the neck and face and often a distinct erysipelatous inflammation of the skin of the cheek and forehead. That a thrombosed condition of this vein may exist without producing the usual symptoms of a hard, cord-like feeling in the neck, pain and edema is a fact and is seen in a case reported by Eulenstein,<sup>8</sup> where the internal jugular was excised for a thrombus extending almost to the innominate.

In case the cavernous sinus is involved, we have some distinct symptoms and to favor a more comprehensive understanding of them we will but briefly make mention of a few anatomic facts. The vessels tributary to this sinus are, the 1, superior and inferior ophthalmic veins; 2, sphenoparietal sinus, arising from a meningeal vein; 3, central retinal vein; 4, inferior anterior cerebral vein.

In the case of the superior and inferior ophthalmic veins, these two vessels do not empty their main flow of blood into the cavernous sinus but into the facial veins; therefore thrombosis of the cavernous sinus does not necessarily very materially affect the orbital veins.

The central retinal vein communicates with the superior ophthalmic vein, but according to Henle, it often empties directly into the cavernous sinus. This is of importance and explains the Gräfe's theory of "congestive papilla." But this theory is not always tenable, for in case of obstruction in the cavernous sinus, where the retinal vein empties into the superior ophthalmic vein, the blood may find an outlet through the facial vein, with which it communicates and hence, in such case, no marked congestion of the papilla would exist.

The cavernous sinus empties into the lateral sinus by



way of the superior petrosal sinus and into the internal jugular vein by way of the inferior petrosal and into the anterior vertebral plexus by way of the basilar plexus. (Virchow.)

Aside from these main routes, it has other outlets in the form of minute veins communicating with the outside of the skull.

Lying within and passing through the cavernous sinus, we have the following structures: the internal carotid artery with its sympathetic plexus, the third, fourth, sixth and ophthalmic nerves. Pressure on the third nerve would cause a paralysis of the upper eyelid and a divergent squint; also rotation on its vertical axis would be prevented. In the very beginning the pressure symptom would cause a contracted pupil from irritation of the papillary fibres of the oculo-motor nerves. Later dilatation of the pupil would result, due to the paralysis from continual pressure. Irritation of the sixth nerve, which supplies the external rectus muscle of the eyeball, would cause the eye to rotate outward, while a paresis of the same nerve would cause the same to rotate inward. This nerve, as a rule, is affected earlier than the third nerve.

Irritation of the ophthalmic nerve gives rise to supra-orbital and frontal neuralgia. When the pain is local and confined to the course of the supra-orbital and frontal nerves, the source of irritation is in all likelihood located in the cavernous sinus. But in case the pain is diffused over the entire half of the head, the pressure more likely comes from a meningitis, which involves the second as well as the third branch of the trigeminal nerve. The pain is accompanied by a hyperesthesia of the skin of the same region, which at the same time is warmer and redder. There are present other symptoms of irritation, like lachrymation and photophobia. Later on, when the pressure causes paresis of this nerve, we have a condition of anesthesia of the skin of the forehead, eyelids, ocular conjunctiva and anterior portion of the nose. The skin at the same time becomes pale in color and cool to the touch.

As a result of interference with circulation from the clot formation in the cavernous sinus, we have a damming back of the blood in the veins tributary to the sinus, causing an edema of the eyelids, conjunctiva, forehead and

nasal mucous membrane. This condition exists first only on one side but soon spreads to the opposite, owing to an extension of the clot to its neighboring sinus by way of the transverse and circular sinuses. This is well illustrated in the following case of mine:

H. K., 2 years, first seen by me Jan. 23rd, 1900, with an acute left-sided mastoiditis. Temperature 104. Had been complaining of ear since two weeks. There was no discharge. Advised an immediate operation, but parents refused consent. Ten days later, Feb. 2nd, I was hurriedly called for and found the little patient in a partially comatose condition. Rectal temperature 106. Had a dry, hot skin. Father said in the interval of my seeing the child, scarlet fever had developed for which it had been treated by the family physician. The scarlatina rash and at places desquamation, were still present. Some signs of meningitis were evident, as shown by the contracted pupil, and the burrowing of the head in the pillow when disturbed. Great intumescence of the tissues above, anterior and posterior to the ear with induration in the neck. No ophthalmic examination was made. Father now implored me to operate. It was a hopeless undertaking, but I consented. At 4 p. m. of the same day I performed a tympano-mastoid operation. The tissues all about the ear were greatly infiltrated with pus. Coming to the cortex, a large sinus just over and leading directly to the antrum was found. The bone was well chiseled away in all directions. I could not, by careful search, discover any avenue of necrosis leading to the interior of the skull. The bone was soft and permeated with the pus. An ice pack was ordered on the head after the operation and kept there. The next day the morning temperature was 103° and afternoon down to 102 $\frac{1}{5}$ °, with a pulse of 128. No delirium or convulsions. The third day the temperature went down to 101° but later up to 103° and fluctuated between these two points. There was some edema of the soft tissues about the left eye, which spread to the side of the head. This was accompanied by a restlessness, but no vomiting. A tremor of the hands became noticeable with slight attacks of convulsions. Marked induration of opposite side of neck with pain over the mastoid on this side was evident. On the fourth day the temperature

remained above  $102^{\circ}$ , not varying more than half a degree, but the pulse was up to 130. The edema on the left side was subsiding, but began to show about the right eye. A second operation was considered but the condition of the patient forbade it. The fifth day temperature went down to  $100^{\circ}$  but the pulse was so rapid and weak that it could not be counted. The edema now involved both eyes so as to close the lids entirely. Enormous induration along the course of the jugulars and extending away down the neck. The mastoid dressing was changed, wound looking good with little pus and no redness, soreness or pain on pressure. The right ear was now discharging and the mastoid very painful and swollen. I made a small exploratory incision on the right side of neck in search of a possible pus cavity, but found none. Sixth day temperature varied from  $104^{\circ}$  to  $101.4^{\circ}$ . Pulse 200. Patient restless as if in pain. The edema about the left eye now cleared up. He rapidly fell into a state of coma and exitus lethalis occurred the afternoon of the sixth day. No post mortem was allowed.

An almost identical case is one reported by J. W. Sterling.<sup>9</sup> His patient was 17 months old, having an acute otitis media occurring during an attack of scarlet fever. A mastoid inflammation complicated matters and was operated on and relieved. Three days following an edema of the left upper eyelid developed, increasing until it became impossible to examine the eyeball. One day later the right eyelid began to swell and continued as in the left lid. Two days following this the swelling of the left eyelid began to subside, the right following and on the fourth day the eyeball could again be seen. Three days after this death occurred. Post mortem examination revealed a thrombosis of the left superior petrosal, cavernous and circular sinuses.

Tinnitus and deafness may be symptoms of inferior petrosal sinus disease, on account of the labyrinth vein emptying into the sinus, which being obstructed, causes a congestion of the inner ear. Where the superior longitudinal sinus is involved in the process, there may be epistaxis, which is profuse and recurring, associated with epileptic symptoms, convulsions and at times unconsciousness.

## PUS COLLECTIONS.

These may exist as,

1st, Extradural abscess,

2nd, Subdural abscess,

3rd, Cerebral abscess,

4th, Cerebellar abscess.

The condition known and spoken of as localized purulent meningitis is the same as extradural abscess. Here the infective process within the ear in its progress toward the brain, develops a mild type of meningitis about the point where the infection is to enter. The dura becomes cemented to the bone and as the infection enters the cranium it is nicely walled off and confined to the site of the meningitis.

Where the invading process is more rapid and there is no time for the dura to throw out sufficient inflammatory material to act as a barrier to the further progress of the condition, we have an entrance effected through the dura into the subdural space. Here possibly the brain membranes have marshalled sufficient force together to stay the progress of the advancing disease, by throwing up a similar intrenchment to confine the disease, as that attempted by the dura on the outside.

In case this is not successful, we have the infection entering the brain substance itself to form a cerebral or cerebellar abscess.

From this it is to be seen that pus may collect either external to the brain membranes, forming an extradural abscess, between the membranes, forming a subdural abscess, or inside of them, forming cerebral or cerebellar abscess. Any single one or a collection of these conditions may exist. It is estimated that 20 per cent. of the ectogenous cerebral abscesses are multiple. Knapp places the number at 4 per cent.

As to the location of the abscess, there is great variation. In case of necrosis its location may bear no relationship to the point of entrance of the disease. For instance, in necrosis through the roof of the middle ear into the middle brain fossa, there may result the formation of an abscess outside of or between the membranes of the brain. From this abscess, fistulae may lead to a point distant

from its entrance from the ear into the brain tissue. In exceptional cases, the brain lesion has been found upon the opposite side from the affected ear. Again, the abscess within the brain need show no communicating sinus between it and the neighboring dura mater and bone.

The majority of abscesses are of the medullary variety. It is the exception to find them in the grey matter.

Just to show the frequency of ear disease as a cause of brain abscess, I give you the statement of Von Bergman and Barker, who claim that one-half of all such abscesses are due to otorrhea. Meyer and Ogles' estimate of the same is placed at 30 per cent. Traumatism has generally been conceded to be the commonest cause of brain abscess; neglecting, to my thinking, in recognizing that the abscess condition is in some of these cases secondary to an ear trouble, lighted anew by the injury, and thus crediting the injury as the prime cause of the abscess.

In discussing the location of these abscesses, it interests us in particular to differentiate between the cerebral and cerebellar varieties. Were we to know the exact avenue by which the infection entered, matters would be simplified in many of our cases. And this is not always impossible. Absence of mastoid symptoms may not necessarily lead us to exclude the possibility of cerebellar disease.

In discussing the subject of various points of entrance of the disease, I mentioned the internal auditory canal and meatus as an avenue leading to cerebellar abscess, its opening being below the tentorium and within the posterior fossa. Two cases reported by Thos. Barr,<sup>10</sup> very beautifully illustrate this by showing on the specimen how the infection traveled from the middle ear, by way of the labyrinthine spaces and auditory and facial nerves to the posterior fossa and caused a cerebellar abscess.

In general, authorities agree that young children seldom suffer from cerebellar abscess, Koerner giving the cause as due to the greater distance of the posterior fossa from the ear. They occur most frequently between the ages of ten and thirty. Out of 177 cases of abscess of otitic origin, Koerner found 98 were in the cerebellum and 79 in the cerebrum. while of 57 cases of intracranial complications found in Pitt's 9,000 autopsies, 3 were abscesses of the cerebellum and 14 of the cerebrum.

Of the cerebral abscesses of otitic origin, the temporo-sphenoidal lobe is the most general location, while those in the cerebellum, in the main, are situated in one of the hemispheres and along the course of the sigmoid sinus.

#### SYMPTOMS.

To my mind the history of having had or still having purulent middle ear disease is symptomatic of, although in itself not sufficient to diagnose, abscess of the brain.

Any brain symptoms that may be present in an acute suppurating middle ear disease are usually so obscured by the more intense otitic ones that the congestion or mild inflammatory condition of the brain membranes may be overlooked, as all the attention of the patient is directed to the painful ear.

Hence, in the early, or so-called "forming stage" of the abscess, most of the symptoms escape us, or are interpreted as due to other conditions, and as a result it is not until the fully formed abscess is present that we realize the importance of our case, and in some instances not then, for such abscesses have been known to exist for years without causing any apprehension of their presence; so that during the forming or initial stage of the abscess the symptoms are either mistaken for some other condition or are overshadowed by the more acute ear pains. During the quiescent stage, which varies from days to months and in some few cases to years, there are of course no symptoms, and it is in the great majority of cases during the fulminating stage that the symptoms that I will now discuss are to be found. These remarks, of course, have reference to the chronic abscess. In the acute abscess we do not have a distinct capsule formed, as in the chronic variety, and as a general rule there is no period of quiescence.

Of the several symptoms to be mentioned, that of headache is the most common, not necessarily on account of its severity, for this varies a great deal, but more on account of its frequency. It occurred in two-thirds of all of Meyer's cases. According to Ladame, it occurs more commonly in abscess than in tumors. As a rule it is the earliest symptom we have and is usually located over the

site of the lesion, although this is not invariable, as it may be diffused, over the forehead or over the entire head.

The pain is not so acute in the initial stage; there remains only a general dullness of the same. This too is true of the hypersensitiveness about the head and particularly over the site of the lesion. Pressure and percussion on the skull will make the person wince, but the pain is not transmitted to the opposite side. This we noted as more common in sinus disease.

The state of mental hebetude is a somewhat prominent symptom. The mind seems not to work well for itself. Even when prodded on, as in conversation, there are marked evidences of a halted cerebration. The patient when spoken to seems to have his mind on something else and is looking with a vacant and dream-like expression into space. He responds to one's questions slowly and methodically, as if weighing every word, and when there is a lull in the conversation he may fall asleep. Macewen compares these symptoms somewhat to those of poisoning by opium.

Next to headache, Meyer found fever to be a prominent early symptom. It occurred in one-eighth of all his cases. But as just stated, the diagnosis of abscess, as a rule, is not made early in the disease, and hence the temperature at the time of recognizing the condition is more frequently found to be subnormal. The differences in temperature findings is very likely explained in the accompanying condition found early in the disease, the temperature being due to the accompanying phlebitis or meningeal congestion, or to acute suppurative process. Such is seen in a case of Ridley's<sup>11</sup> where a cerebellar abscess was found in a boy of 14 years with chronic otitis, presenting marked pyemic symptoms, temperature 99° to 105°, but with a slow pulse, respiration and cerebration. In uncomplicated cerebral abscesses the temperature is usually about normal or slightly subnormal, 97° to 99°.

Pulse and respiration are slow. The former is what is known as cerebral pulse, that is, slow and full and varying between 40 and 60 beats. The slowness of the pulse is due to the pressure exerted by the abscess, but is not always necessarily lowered in proportion as the abscess is large; for a large abscess may be accompanied by a sufficiently

large amount of brain disintegration, so as to lessen the amount of pressure exerted by the accumulated pus.

The respirations are also slow and regular, but at times may be of the Cheyne-Stokes type and especially is this likely to be true where the abscess is located in the cerebellum. The peculiarity in both the temperature and pulse is to be noted where the abscess is emptied. At first they immediately rise and then synchronously fall to the normal. As with temperature so with rigors. The earlier the case is seen, the more prominent is this symptom. Later on it is exceedingly uncertain in appearance and variable in degree.

Vomiting is another early symptom and is very frequently present, but becomes less so as the fully formed stage is reached. It is characteristic in that it is spontaneous, unaccompanied by nausea or retching. Obstinate constipation, especially in the otherwise regular, is, in connection with the other symptoms, diagnostic.

Dizziness and vertigo on attempts to get up or move about much are oftentimes present.

The presence of convulsions and paralysis depends a great deal on the particular part of the brain involved, and hence if present may be symptomatic of the location of the abscess. Paralysis of the third cranial nerve would cause ptosis, strabismus and dilated pupil.

Examination of the eyes for the finding of changes in the fundus will, in many cases, prove positive, but it is not as constant a symptom in abscess as it is in tumor. To show the value of ophthalmoscopic examination in these cases, I refer you to the work done by Gradenigo, Delstanche and others who show that, in one-half of all cases of intra-cranial complications due to middle ear disease, we find lesions of the papilla.

Owing to the abscess being, as a rule, situated outside of the motor area, symptoms of localization are seldom present, although at times such may appear. In some cases of abscess of the temporo-sphenoidal lobe, we may have a hemiplegia of the opposite side, involving the face, arm and leg. It may be partial or complete and occur in the reverse order.

Aphasia is another one of the less uncommon symptoms. If it is of the sensory type—word deafness—the abscess



would be located in the posterior part of the temporo-sphenoidal lobe; and if of the motor type, its location would be at the base of the third and ascending frontal convolutions.

In case the abscess is located in the cerebellum the head pains in the last stage are persistent and very often intense, and as a rule located at the occiput and nape of neck.

Vomiting is also more constant and uncontrollable than in temporal abscess. Koch<sup>12</sup> mentions as diagnostic the possibility of double-sided amaurosis as contrasted with temporal abscess, where this has never as yet been noted. Koch also mentions the presence of patellar reflex disturbance, more often decreased, as a symptom wanting in temporal abscess and at times present in cerebellar abscess.

Emaciation and loss of muscular strength are very noticeable symptoms, the cause of which may be found in the explanation of Luciani, who says that within the cerebellum reside the centres for the musculo-nervous apparatus.

Abscess of the occipital and frontal lobes as the result of ear disease is the exception and occurs only seldom, and then as the result of an infective embolism (Macewen).

#### DIFFERENTIAL DIAGNOSIS.

This phase of the subject is of the utmost importance to the operator. He has a variety of conditions to deal with, some of which require quite a different procedure in operating than others. The symptoms, of sinus thrombosis and abscess stand out in bold relief from one another and as individual conditions are not to be confounded, but where we have a combination of conditions, as very often occurs in cases of sinus thrombosis and cerebellar abscess, we may find ourselves with a very difficult problem to solve; but in just such a combination of conditions as mentioned, it matters not so much, as the route of operative procedure may be the same, that is, through the mastoid, via the sinus and on the posterior fossa. But when we come to differentiate between an abscess in the cerebrum and the cerebellum, it becomes a matter of much greater difficulty. The latter produces less marked local symptoms and hence is more difficult to diagnose than the former.

Luc declares the differential diagnosis between subdural abscess, meningitis and cerebral abscess to be difficult, and advises an exploratory operation consisting of a series of incisions, first through the dura, and, if no pus is found, then through the pia and then, if necessary, through the cerebral tissue. He condemns puncturing the membranes in an effort to locate a pus cavity in the brain, but instead advises going step-wise. This same advice seems applicable in cases where doubt arises between a phlebitis and thrombosis and a pus collection in the cerebellum. Although incising the membranes has its advantages they seem to be offset by the liability to hernia of the brain and its results. Puncturing of the dura before exploring the brain tissue may be done aseptically with a heated electrode.

At times we are called upon to differentiate between diffuse purulent meningitis and that of abscess and sinus disease. Often this very condition masks the forming stage of an abscess within the brain tissue. As a means of differentiating between such a condition of meningitis or that of brain abscess from sinus disease, examination of the cerebro-spinal fluid is at times employed. Leutert<sup>13</sup> and Quinke recommend the lumbar puncture, while Koch suggests puncture through the dura at the site of operation, as methods of procuring the fluid. Absence of polynuclear leucocytes, increase of fluid matter, clear fluid absence of micro-organism are negative signs. This method would seem of greater value in determining between a meningitis serosa and an abscess of the brain on account of the excess of fluid present, and by withdrawing some would materially relieve the symptoms and possibly cure the trouble. But as this condition so often accompanies that of abscess, little may be gained curative by such method.

Other varieties of meningeal trouble, like tuberculosis and a simple hyperemia, have often to be excluded. Both are usually confined to children. The tubercular meningitis is as a rule secondary to a tubercular affection in the ear or some other organ.

Tumors are at times to be considered in the diagnosis, but their very slow growth and the absence of ear disease are usually sufficient to exclude them. There is a growth

that complicates ear disease which was described by Balfour and called chloroma. It is a very rare and malignant disease and occurs in the young.

In case facial paralysis is present it may be important to differentiate between that of cortical and of peripheral origin. Macewen says that in the cortical kind the paralysis is not as complete and the sense of taste in the anterior two-thirds of the tongue remains intact.

As a means of diagnosis, percussion of the mastoid is being relied upon more and more nowadays. Authorities like Macewen and Koerner advocate and indorse it.

Just to show how a continued and overlooked cause of pyemic symptoms may occur, let me but briefly refer to a case of infected thrombosis of the sigmoid sinus belonging to C. Barck. Ligation of the jugular vein had been performed in order to limit the systemic infection, but on autopsy a large abscess containing two tablespoonfuls of pus was found situated in the posterior cervical triangle under the deep fascia of the neck, communicating directly with the sigmoid sinus by way of the mastoid foramen.

#### PROGNOSIS IN OTITIC BRAIN ABSCESS.

The course of the chronic abscess when not interfered with is death, due either to rupture in the ventricles of the brain or upon its surface, or from extensive edema or, in some cases, anemia of the brain. Kopke<sup>14</sup> in reviewing 141 cases operated on, found 40.4 per cent. were permanently cured. 26 were acute, showing 42.3 per cent cured, and the rest were chronic with 43.1 per cent. cured. He found cases with normal or subnormal temperature offering a better prognosis. In the acute variety, death is the usual termination when not interfered with surgically. It occurs anywhere between eight days and four to six weeks. A very rare exception to this is a case seen by me in consultation with Dr. Porter of Chicago. The very uniqueness of this case warrants the recital here.

R. W., 2½ years, on the 26th of January, 1900, was suddenly taken ill with a convulsion. Temperature 104°, vomited once. A diagnosis of entero-colitis was made and he was put on small doses of calomel. The following day the temperature was 99°. No more convulsions or vom-

iting. From Jan. 29th to Feb. 5th the temperature ranged between  $104\frac{1}{2}^{\circ}$  and  $99^{\circ}$  with rather sudden remissions. Patient very restless, Meningitis was suspected and a specialist on children's disease was called in and diagnosed tubercular meningitis. Its cause was looked for about the ear, but no evidence of any ear trouble could be made out by them. From the 5th to the 9th the temperature was between  $97\frac{2}{5}^{\circ}$  and  $98\frac{1}{5}^{\circ}$ , pulse 116 to 88. Patient very restless unless under full dose of bromid. Inclination to throw head backward and arms over head frequently. From the 9th the temperature went gradually up until the afternoon of the 12th, when it reached  $103^{\circ}$ . Then it fell again to  $100^{\circ}$  only to go up once more to  $103^{\circ}$  on the following day. The pulse became very weak and stimulants had to be used continually. He was now somnolent most of the time and without any bromid. On the 14th the temperature became subnormal and remained so for the next seven days. At this time the eyes were examined by an oculist but no fundus changes were found. On the 26th I saw the patient for the first time during his illness. I had seen him a year prior to this when suffering from an otitis media with pain over the left mastoid, but this subsided in two or three days. The little patient was emaciated to the extreme and as a consequence was weak and anemic. His right ear began discharging the day before and when I saw him was continuing so. The secretions were examined and found to contain only the streptococci and staphylococci. The left ear was dry but the drum membrane bulged slightly, showing fluid within the middle ear. The posterior superior walls of the ear canals showed no sagging whatsoever. Both mastoid regions were sensitive to pressure but presented no redness or edema. Temperature at this time was  $100\frac{2}{5}^{\circ}$  and his speech was disturbed. The aphasia was of the ataxic variety. When spoken to his answers were long drawn out, in measured style and not entirely correct. Very often the wrong word was used. There was clearly a lack of coordination in the muscles concerned in speech production. Two days later the left ear began discharging and both ears continued to discharge profusely with a corresponding rapid improvement in the patient. One week later measles developed endangering the life of the already

exhausted little one, but fortunately he weathered this last trouble safely and when seen last by me only a few days ago, he was in the very best of health.

ABSTRACTS OF FIVE CASES EXPLANATORY OF ILLUSTRATIONS.

SPECIMEN I.—Case was an old man, seen in a state of typical basal meningitis, with paresis of some of the eye muscles; and no operation was performed, as the case had evidently progressed too far.

Specimen shows a carious destruction of tegmen tympani and antri, through which the suppurative process reached the meninges. Clinical diagnosis of diffuse suppurative basal meningitis was confirmed by post mortem examination.

SPECIMEN II.—F. F., age 15, seen March 15th, 1887. Otorrhea on left side for about 8 years, treated at intervals; headache from time to time. During the last six months the headache was more frequent and violent than before and, after cessation of discharge from ear, exceedingly severe for last 5 days; then dizziness, nausea and convulsions set in. When seen, patient had temperature of  $104^{\circ}$  to  $105^{\circ}$ , was delirious, half comatose, very restless and apparently suffering with severe pain in head.

External canal was filled with thick fetid pus; wall was so swollen that no speculum could be introduced. Mastoid region was thickened, edematous very tender. Diagnosis: Mastoid abscess with probably intra-cranial complications. Operation next day showed a large mastoid abscess and extensive caries. The discharge, both through the opening and the external canal, was profuse. For the next few days the patient seemed to improve; the headache disappeared almost completely, the fever went down to  $100^{\circ}$  to  $102^{\circ}$ , she became more conscious and answered questions. Then she got worse again, sank more and more into coma, paralysis of the right side set in and she died in a comatose condition on March 29th. Autopsy next morning: The skull was opened in the usual way; dura mater of convexity somewhat congested, but not more adherent to bone than usual. Veins all overfilled. On attempting to take brains out of skull, there was a gush of thick, yellow fetid matter which came out of an abscess

cavity in the left hemisphere. It had opened at a place opposite the posterior wall of the petrous bone and had been adherent to its periosteum quite firmly around the point of opening. Adhesions were found nowhere else. The whole dura mater was covered with pus, but the greater portion of it was evidently from the abscess. After the brain had been taken out, the whole temporal bone was removed by two uniting cuts.

The dura mater covering the tegmen tympani and the posterior surface of the petrous bone was thickened and of a dirty, greenish-black color. In the midst of this, over the aqueductus vestibuli, there was a small hole occluded by a protruding clot of thickened pus, which corresponded to the opening into the brain abscess. The temporal bone was then divided to show the tympanum, mastoid antrum and labyrinth. They were found united into one irregular cavity, partly filled with matter and detritus. A probe introduced into the wound appeared without difficulty in the middle ear. The malleus and thickened drum-membrane were *in situ*. The perforation of the latter was a relatively small one, in the anterior lower region. The whole tegmen tympani was carious, very thin and showed a number of small perforations, through which pus was escaping.

The abscess cavity in the left hemisphere was situated in the temporal lobe extending backward into the occipital lobe. It was almost as large as a goose egg, of an irregular oblong shape. There was a firm enclosing capsule of connective tissue. The opening at the above mentioned place was large enough to introduce a penholder, though it was in part of course, artificially made. The pus within the cavity was of the most offensive character so that it was nearly impossible to remove the smell from the head.

(Full report in Transactions of Mo. State Med. Assn. '87.)

SPECIMEN III.—Chronic otitis media, mastoid abscess and sigmoid sinus thrombosis. Evacuation of sinus and ligation of the jugular vein. Death from pyemia due to a deep-seated abscess in cervical region. Duration one month.

History:—John K., Hungarian by birth, 26 years old. Patient had, since childhood, left-sided otorrhea.

Patient first consulted me on January 15, 1894, because of pain in left ear for three or four days preceding. Right

ear normal. Left ear, foul smelling discharge in moderate quantity. The walls of the external canal were found to be somewhat swollen, the tympanic membrane gone and the middle ear completely filled with small polypi and granulation tissue. The region over the mastoid showed no swelling, but was somewhat tender on pressure. Temperature 100° F. Under local treatment he improved.

On February 17, I was called to see him at his residence. He was confined to bed, complaining of severe pain in the entire left side of the head. He had had chills and rigors for two days and had vomited two or three times. Temperature 100,<sup>2</sup> pulse 100. The region over the mastoid was somewhat swollen, and the tenderness on pressure was more pronounced.

Operation (Stacke's), February 18th.—Immediately after the removal of the external table, fetid pus was found. The antrum was exposed, and found filled with granulation tissue and pus. A portion of the posterior wall of the external canal was then removed, so that the canal, antrum and tympanum formed one large cavity from which the foul smelling pus and abundant granulation tissue were carefully removed. Only small portions of the ossicles remained. The tegmen tympani and antri was found healthy, but the bone in the region of the lateral sinus seemed somewhat discolored, so that I stated at the close of the operation, that if the symptoms did not subside rapidly, opening of the sinus would be indicated.

After the operation the patient felt relatively well and the temperature did not reach 100.<sup>2</sup> However, during the next two days it rose to between 103 and 105, the pulse varying between 80 and 112.

He complained of headache and had chills. There was no paresis nor any material change in the fundus of the eyes. The general condition and curve of temperature were typical for systemic pyemic infection. Therefore, I opened the lateral sinus, February 21, in its sigmoid portion from the cavity in the mastoid. An oblong piece of bone, (discolored as before described) nearly one inch long and one-third of inch wide was removed by careful chiselling and forceps. Some pus and granulations were found between it and the exposed wall of the sinus, which was also discolored. The sinus was then punctured with an exploring

needle and found thrombosed. An incision in its wall, as long as the opening in the bone was then made, and a large softened purulent thrombus removed. The cavity was then gently cleansed with a blunt spoon as far as practicable, first downward then upward. There was no hemorrhage from the lower and only a moderate one from the upper end. As soon as this appeared the sinus was closed by compressing its walls with antiseptic gauze and the hemorrhage easily checked.

Subsequent course.—The expectation of checking the further infection of the system was not realized. While on the next day he had no chills (temperature below 100), and felt some better, on the following day he became worse, the symptoms beginning with a chill. The temperature again rose to  $104\frac{2}{5}$ , pulse became frequent, pain appeared in different joints, and, in short, he presented for the next two days the typical picture of an even more serious pyemic infection.

The area over the jugular vein in the neck had been regularly examined since his entrance into the hospital, but it was never painful and no thickening nor stringiness indicating thrombosis of the jugular vein could ever be detected. For the continuance of the septic state there seemed to be but one explanation, viz., that the septic thrombus had already reached the bulb of the jugular, and had not been entirely removed. It was accordingly decided to ligate the jugular vein, an operation which was done by Dr. A. C. Bernays, on the 24th. The vein was filled with normal blood; no signs of thrombosis. It was ligated in two places and cut between the ligatures.

The ligation did not have the desired effect, as the pyemic state continued. Frequent and profuse perspiration, pain in the joints and high temperature weakened the patient more and more. He became delirious, then somnolent, and finally fell into deep coma, and exitus lethalis ensued on the 15th of March. The temperature during the last two weeks ranged between 101 and 105, pulse between 110 and 130.

The wound in the mastoid and sinus was throughout in the normal condition of an undisturbed healing process.

Post Mortem.—The skull was opened in the usual way. The contents did not present any pathologic appearance,



and the brain was intact. There was no leptomeningitis, nor any trace of pachymeningitis. The dura mater covering the temporal bone was perfectly normal throughout. The inner wall of the lateral sinus in its sigmoid portion was of normal appearance half transparent, so that the defect in the bone due to the operation could be plainly seen through it. Upward, in its horizontal portion, the sinus was closed for about one inch, its walls being soldered, as it were. Downward, in the end of the sigmoid portion, it was patent for about half an inch, but further down it was firmly soldered. The jugular vein between the bulbus and the ligature was filled with a healthy thrombus which showed no disintegration and which was without doubt the consequence of the ligature. No thrombus was present in any other of the dural sinuses. Thus far, the postmortem findings did not offer any explanation for the continuance of the pyemic state after the two operations and the conclusion arrived at at this time was that the infection had become too general to be overcome by obliteration of its foci. And it was rather accidentally, than otherwise, that the true cause was discovered. Owing to the pressure of time I did not at first intend to remove the temporal bone in order to preserve the specimen, but afterward decided on doing so, and during this procedure, after the big muscular layers on the posterior portion of the neck had been divided, we found a large abscess under the deep fascia of the neck below the splenius capitis and levator scapula in the posterior cervical triangle. The abscess contained about two tablespoonfuls of exceedingly fetid pus. The digastric fossa was free from pus.

About an inch and a half upward, direct communication could be traced between the abscess and the lateral sinus through a very large mastoid foramen. This abscess was without doubt the cause of the continued pyemia and fatal termination. No symptoms pointed to its existence during life. No redness, no swelling, no pain in the region. There is no doubt that its recognition and surgical treatment would have saved the life of the patient. Not as an excuse, but simply as a matter of fact, I will state that the patient had been seen daily, not only by myself, but by the aforementioned surgeon, and also by one of the most

careful diagnosticians in our city. In spite of repeated consultations, the real focus of the pyemic infection was not discovered until the post mortem examination and even then was almost overlooked.

SPECIMEN IV.—G. R., Nov. 30, 1893, aet. 23, had influenza and pneumonia for about 3 weeks. In right ear had chronic otitis media before influenza set in. In consequence of latter, an otitis media developed in left ear also.

When seen in consultation patient had severe pain in right mastoid region and head. Mastoid region red, edematous. The upper and posterior wall of external auditory canal hung down and was swollen nearly occluding the lumen.

Next day I operated under narcosis and found the bone sclerosed exceedingly hard and dense. No pneumatic cavity was observed until the antrum was reached, where sinus was found; free communication with tympanum.

First two days patient did well. On Dec. 3, he had a chill and temperature rose to  $103.5^{\circ}$ . Next day fell to normal, patient felt well, was up until Dec. 10, then had a chill at 6 p. m., with temperature of  $104\frac{2}{5}^{\circ}$  profuse sweating.

The wound looked well the entire time; the sinus wall especially was found of such dense and healthy looking bone, that in consultation with Dr. S., a diagnosis of sinus thrombosis by continuity was deemed improbable. Under narcosis, the cavity was cureted again and the opening into the middle ear enlarged. Same evening there developed pain and swelling in the right shoulder joint. Next day, pain and swelling in right and left elbow joint, temperature  $103^{\circ}$ . Frequent chills and profuse sweating next day. Exitus lethalis on 15th.

Autopsy.—No thrombus in lateral sinus. Blood in it fluid, mixed with some minute particles of pus. Wound in the thinnest part 2 inches thick, dense, hard and healthy looking. The entire mastoid is of dense ivory like consistency but traversed by enlarged veins filled with pus. The autopsy showed that an opening of the sinus would not have saved the patient. It was clearly a case of "otitic pyemia, without sinus thrombosis."

SPECIMEN V.—J. S., colored. aet. 48. Otitis media and otorrhea since Christmas. For about 2 weeks swelling behind the ears.

Operation March 2, 1896. Large abscess and detritus in mastoid reaching into antrum. For one week regular healing course. On 28th chill and vomiting, headache; confined to bed. Suspicion of sinus thrombosis but no fever, pulse 72. Proved to be gastritis after eating too many tomatoes; had similar attack of indigestion before. Suppuration from ear ceased in third week. Dismissed on April 14 with wound closed.

Next day returned with a benumbed sensorium, and stated that he had been unable to pass urine for 24 hours. Catheterization yielded on a small quantity of urine.

Sent to City Hospital, where he was comatose. Pulse 72, temperature  $104^{\circ} \frac{1}{2}$ . Differential diagnosis between menia and cerebral affection left open. Operation proposed for next day. Patient fully conscious, temperature  $99^{\circ}$ , pulse 72. Complained only of headache; in support therefore operation was performed. During the next few days, patient could not be seen regularly for essential reasons. He fell again more and more into coma, with temperature 101 to  $103^{\circ}$ , was very low on 20th. I operated, reopening the wound and found the mastoid filled out with healthy tissue wall against sinus being firm and hard. It was therefore not exposed. I trephined in the cerebellar region. Some dirty lymph and small amount of pus was found inside of the dura. Patient died without regaining consciousness on April 20th.

Post Mortem.—Diffuse cerebro-spinal meningitis. Infiltration of pia thickest on right side upon frontal lobe and below cerebellum and medulla oblongati. Dura covering temporal bone entirely intact. Sinus operated, contained fresh blood clot.

Temporal bone removed, shows the entire tip of the petrous pyramid destroyed by tubercular caries; Cochlear and semicircular canals wanting. Remnant surfaces covered with cheesy masses and tubercular nodules.

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## XXVII.

### REPORT OF A CASE OF ULCERATIVE LARYNGITIS, SIMULATING TUBERCULOSIS WHICH PROMPTLY YIELDED TO MER- CURIAL TREATMENT.

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This case is reported, as an illustration of the advisability, in cases of ulcerative laryngitis, of doubtful diagnosis, of placing the patient under a mild course of mercurials, even though a history of syphilis be entirely wanting. The patient presented signs and symptoms, strongly suggestive of tubercular infection; the mercury was administered with the idea of clearing up the diagnosis, and, as will be seen, this course was followed by a rapid and permanent cure.

The history of the case is as follows:

B. L., male, aet. 30 years, born in Russia, 28 years in the United States, married five months, family history good.

PREVIOUS HISTORY,—Eight years ago, had gonorrhea of five weeks duration, complicated by "swollen testicle," for which he saw a doctor four times; denies ever having had a secondary eruption, and never had, so far as he knows, any of the sequelae of the initial lesion of syphilis. I thought of an intra-urethral chancre, which might possibly have complicated his so-called gonorrhea, but the absence of all sequelae of such an infection thereafter, negatived the idea.

He was then perfectly well up to January, 1900, when he suffered from the "grip," which he declares kept him in the bed for two days; four or five days thereafter, suffered a relapse, attended by severe sore throat, which, from his description of his symptoms, I judge to have been an acute catarrhal laryngitis; by February, 1900, the patient was perfectly well.

Six weeks before calling upon me, i. e., the middle of May, 1900, he commenced to suffer from pain in the larynx; irritation causing cough: some dysphagia.

He placed himself under the care of a general practitioner who examined his throat and treated him conscientiously for six weeks, with no other result than to produce an aggregation of all his troublesome symptoms.

On the 29th of June, 1900, I saw him for the first time; the young man was poorly nourished; almost cachectic; emaciated to a degree; although his normal weight was about 125 pound, he had been reduced to 110 pounds during the six weeks of his illness.

Voice rhancous, almost gone, complete aphonia being a question of only a few days; complained of intense dysphagia, the blandest articles of food, even water, producing intense agony when swallowed: the act of deglutition is painful in itself: the ingestion of food, either solid or liquid, causes a suffocative cough so irritating and painful as to make each meal a painful and laborious undertaking. The cough, hacking, constant, not severe, unattended by expectoration, evidently due to laryngeal irritation. Temperature was 100° F.: pulse, small, weak, 90. General condition, miserable. Examination of the chest: while certain areas presented signs of a suspicious character, I concluded not to attach too much importance to them, until I had observed the patient for a week.

The sputum was not sufficient in quantity to imperatively demand a microscopic examination, for which I had no facilities, as the patient was being treated in a country place.

Examination of the larynx revealed an ulceration in the pyriform sinus on either side, of the size of a pea, margins sharply defined, the base of the ulcers being covered by a layer of pus and detritus; destruction of tissue not very deep; similar ulcers, exist in the valleculae, but not quite so large or deep as those in the pyriform sinuses; the upper margin of the epiglottis thickened to about double the normal, studded with superficial ulcerations; ventricular bands slightly swollen, reddened but not very deeply, show scattered superficial ulcerations; the edges of the vocal bands, which are deeply congested, are ragged and present small superficial ulcers; the arytenoids,

slightly edematous, present on their superior surfaces small superficial ulcers. The introitus laryngis is narrowed by the swelling of all the parts.

With this picture before me and with the previous history as above given, the diagnosis certainly seemed to lean to tuberculosis; emaciation, hacking cough, almost complete aphonia, intense dysphagia, ulcerative laryngitis, the duration and history of the disease, favored this view.

The local conditions in the larynx which caused me to doubt the tubercular nature of the ulcerative process, were, the symmetry of the ulcerations, their sharply defined edges, the comparatively small amount of tissue destruction, the absence of adventitious tissues in the larynx, the absence of marked edema, and the deeply congested condition present.

With the idea, therefore, that syphilis might have had some latent influence in the production of illness I put the patient on  $\frac{1}{8}$  grain pills of the protiodid of mercury, every four hours during the day, and insufflated iodoform powder into the larynx daily.

This treatment by mercury, I adopted, as much for the purposes of diagnosis as a means of treatment.

The third day, the acuteness of the pain in swallowing was somewhat less; the ulcers assumed a cleaner and healthier appearance; the dose of the protoiodid was now doubled, the patient receiving  $\frac{1}{4}$  grain four times a day; insufflation of iodoform biweekly; improvement in the condition continuous and progressive, so that at the end of two weeks the patient partook of solid food without pain in deglutition.

During the third week of treatment, the patient received  $\frac{3}{8}$  of a grain of protoiodid four times a day and, as by the twenty-second day of treatment the ulcerations had completely healed and the patient had no complaint to make, I stopped the mercury and put the patient upon a course of iron and bitter tonics. One month after his first visit, he had regained his normal weight, his cough had ceased entirely, and as he stated "he never felt better in his life."

It would seem to be a harmless and possibly a very valuable aid in the treatment of all ulcerative conditions in the larynx, tubercular or nontubercular to put the

patient on a mild mercurial treatment at the outset; the syphilitic element in the infection, attenuated perhaps through generations may play a powerful role in patients, who positively have never themselves suffered from venereal disease. In such a case mercury will certainly exercise a beneficial effect, for besides its specific antiluetic properties, we know from the experiments of Keyes, that small doses of mercury have a remarkable quality of increasing the number of red blood corpuscles, and the percentage of hemoglobin.

For diagnosis as well as for treatment, the writer advocates the administration of small doses of protoiodid of mercury in all cases of ulcerative laryngitis, where it is not directly contraindicated.

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## XXVIII

# ON THE CORRECTION OF OLD TRAUMATIC DEPRESSIONS OF THE NOSE BY SUBCUTANEOUS PLASTIC OPERATION.

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The object of the following paper is to report the operative measures employed in two cases of nasal deformity, characterized respectively by traumatic depression of the cartilaginous bridge and by traumatic depression of nasal bones.

Although similar operations have been reported, notably by J. O. Roe, yet the details of the technique have not been stated with sufficient fullness to enable one to work from the descriptions.

As seen in the photographs both of the writer's cases\* were adapted for the insertion of an artificial bridge of celluloid or metal. In view, however, of the liability of these artificial supports to come away, the attempt was made to fill up the depressed area by the subcutaneous insertion of cartilage or bone taken from adjacent parts which could be spared without detriment to the patient.

CASE I. *Depression from septal abscess corrected by elevating a portion of the triangular cartilage.*

A man, about 25 years of age, came to the clinic, exhibiting an abruptly rounded depression of the nasal bridge at the middle of the superior outline of the triangular cartilage. The tip of the nose was of normal shape and the nasal bones were in their normal position (Fig. 1). Examination of the interior of the nose showed a defi-

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\*I am indebted to Dr. J. P. Clark, in whose service at the Massachusetts General Hospital these cases occurred, for kindly referring them to me.



ciency of the triangular cartilage on its upper border at a point corresponding to the external depression, with firm adherence to it of the mucous membrane and the overlying skin. The condition was evidently the result of an old septal abscess occurring near the superior border of the triangular cartilage, with resultant necrosis of the cartilage at the site of the abscess and consequent depression of the bridge immediately above. The patient stated that



Fig. 1. Photograph from Plaster Cast of Nose Taken Before Operation.

he had fallen about a year previously, striking the nose. Nasal occlusion immediately came on, lasting for a number of days and clearing up after the sudden discharge of matter from the nose. Depression over the injured area then began to form and in a few weeks attained the appearance presented at the time of his coming to the hospital.

The operation consisted essentially in cutting out a quadrangular piece of septal cartilage and lifting it upward

subcutaneously until the external depression was filled out. Under cocain and suprarenal extract, an incision was made through the triangular cartilage about one centimeter in front of its articulation with the perpendicular plate of the ethmoid and parallel to it, extending from the skin above to the vomer below. A second incision parallel to the first was then made through the cartilage about one centimeter behind the tip of the nose. The

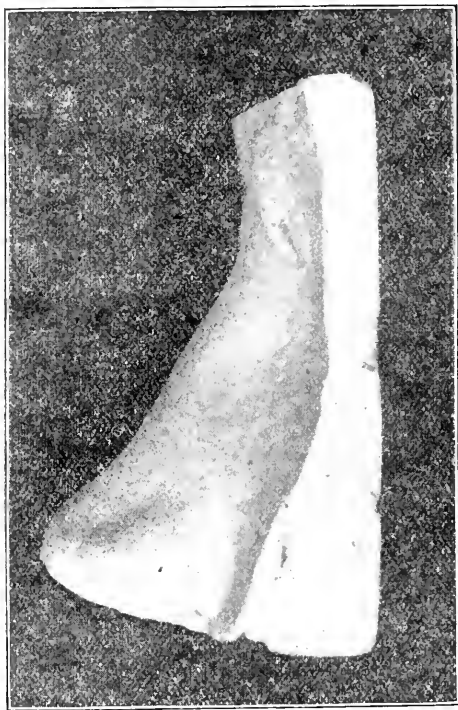


Fig. 2. Photograph from Plaster Cast of Nose Taken Six Weeks After Operation.

inferior extremities of the incisions were next connected by a third, running parallel to the upper border of the vomer. A flap of cartilage was thus produced adherent only above to the mucous membrane and fascia corresponding to the external depression. On sliding the flap upward and forward in its own plane the skin of the depressed area was lifted up and simultaneously a rectangular perforation of the septum was created at the lower border of the flap. The anterior and posterior ends

of the flap were still in contact with the septum although at a point higher up than that which they formerly touched. After being elevated to produce a nearly straight superior outline of the nose, the transported flap was held in position by gold plated pins thrust through it and the adjacent septum on each side in an anteroposterior direction.



Fig. 3. Before Operation.

The reaction was slight, and after three weeks, the parts were sufficiently firm to permit removal of the pins. A few weeks later the plaster cast shown in Fig. 2 was taken. The bridge was firm and the patient had no discomfort from the perforation.

*CASE II. Correction of deformity from an old depressed fracture of the nasal bones by subcutaneous implantation of a septal spur.*

A young man, 17 years old, came to the clinic with the history of having been struck violently several weeks before on the nose. The nasal bones had been symmetrically depressed by fracture along their lines of union with the frontal and maxillary bones and were firmly fixed. Examination of the interior of the nose showed the triangular cartilage to be essentially normal except for a long

spur on the right side at its junction with the vomer. Under ether the spur was sawed from below upward, but so as to leave the mucous membrane of its superior surface intact. A slender knife was then introduced into the right nasal passage and a broad sweeping incision made between the upper surface of the nasal bones and the overlying skin, thus forming a subcutaneous chamber between these structures. The spur was then rolled upward, still adherent by its mucous membrane to the septum, and after some further loosening of the membrane to afford the necessary slack, was carried into the



Fig. 4. Photograph Taken Eight Months After Operation.

chamber prepared for it. The skin of the bridge was thus lifted from the nasal bones by the spur. After some external manipulation the spur was held in position by a thread passed through its mucous membrane from one side of the nose to the other. An external splint was also adjusted to aid in holding the transplanted bone in position. There was slight local reaction and almost no constitutional disturbance. After ten days the spur was found sufficiently firm to permit removal of the stitch and splint. The subsequent healing was uneventful. The photograph,

Fig. 4, taken eight months after the operation, shows the condition at the present time. The spur can be felt beneath the skin firmly fixed in the middle line in the subcutaneous fascia. It is capable of slight lateral motion on firm pressure. The intra-nasal condition is essentially normal, except for a broad cicatricial band on the right high up in the roof, near the anterior end of the nasal bone, indicating the spot where the spur was introduced into the subcutaneous chamber. There is no disturbance of nasal breathing or of olfaction.

## XXIX.

### A CASE OF PERSISTENT LARYNGEAL OBSTRUCTION IN A CHILD.

BY SAMUEL E. ALLEN, M. D.,

CINCINNATI, O.

On the afternoon of Friday, April 6, 1900, the writer was summoned by the physician in charge to perform intubation. On arriving at the house the patient was found to be a fine, well nourished infant of between nine and ten months and weighing twenty-three pounds. There was well marked dyspnea and considerable cyanosis. The smallest tube in the O'Dwyer set was immediately introduced, giving relief to the threatening symptoms. On inquiry it was learned that the child had been ill since the previous Sunday with a cold and symptoms of influenza and not until Friday morning had there been any difficulty in breathing. There had been nothing in the pharynx and the repeated bacteriologic tests now made failed to reveal any Loeffler bacilli. To be certain, however, on Saturday 2000 units of antitoxin was given.

Sunday, April 8th, the patient developed a deep seated bronchitis, probably with some broncho-pneumonia. Oxygen was administered during the night and the two following days, when the threatening pulmonary symptoms subsided.

On April 10th, the tube was removed. The difficulty in breathing was very marked and the tube had to be reinserted at once. April 12th, another removal was undertaken but the dyspnea was even greater than after the first removal, and the tube was immediately reinserted.

After one other unsuccessful removal it was decided to leave the tube alone for a few days, during which time the child did fairly well. Feeding was difficult but was carried on with the head of the child thrown back over a pillow and the milk dropped into the mouth with a medicine dropper. This position of the head seemed to clear the tube somewhat and was therefore assumed a good part

of the time. Removal was again tried on the 16th, but it seemed as if no air at all could pass through the larynx. Reinsertion was extremely difficult, owing to the soft, flabby condition of the parts, and the child nearly died before the tube was finally replaced. Reinsertion before this time had been easy. On the 21st a little swelling was noticed in anterior portion of the neck below the larynx. This swelling increased up to the 23rd and swallowing also became much more difficult. On the afternoon of April 23rd, 17 days after intubation, tracheotomy was performed. The patient was chloroformed, the intubation tube being still in position. The incision into the swollen tissues of the neck evacuated an ounce or more of putrid pus. A few bubbles of air escaped showing that the abscess had some slight connection with the lumen of the trachea. Before the pus was entirely wiped away the patient coughed up the intubation tube and the respirations stopped. The opening into the trachea had to be made as expeditiously as possible and after the insertion of the tracheotomy tube, artificial respiration quickly restored the patient. From this time on the patient did nicely. Feeding was easy and every thing progressed favorably. The larynx, however, remained occluded, not the slightest breath passing through the glottis.

Laryngeal inspection was not satisfactory owing to the age of the patient. The momentary glimpses obtained showed a hyperæmic and swollen condition of the mucous membrane. Oils injected into larynx flowed out through the tracheal opening and this intra-laryngeal treatment was kept up for a month or more. Early in June the patient for the first time was able to get a little air through larynx. Breathing with the tracheal tube corked now became free until the latter part of June when the patient was attacked by a severe intestinal catarrh, causing marked emaciation. July 5th the patient was removed to Michigan where the laryngeal obstruction gradually subsided and on July 17th the tube was finally removed. Since this date there has been no trouble at all with respiration.

The interesting points in this case are: 1. A positive diagnosis of the trouble was impossible, everything pointing, however, to a simple catarrhal inflammation followed

by chronic subglottic edema. How much the intubation tube had to do with helping to keep up the swelling it is impossible to say. It is absolutely certain that the case was not one of diphtheria. Neither bacilli nor membrane could ever be discovered.

2. The damage done by the tube to the anterior tracheal wall and the formation of the extra tracheal abscess. This I believe was due to the position the head assumed for so long a time, the end of the tube causing pressure atrophy and perforation of the anterior wall and permitting the secondary infection of the tissues in front.

3. The length of time of wearing the two tubes, the intubation tube for 17 days and the tracheal tube for 12 weeks.

4. The disappearance of the laryngeal obstruction with the onset of the severe intestinal trouble and emaciation.

After the first week or so following the tracheotomy, as the obstruction did not disappear, it became a question as to where the obstruction was located, whether in the trachea at upper margin of the tube, due to granulations or sinking in of tracheal walls, or in the larynx itself. To solve the problem, almost the entire convex portion of the outer tube was cut out, and, after taking out the inner tube, the posterior wall of trachea and the upper margin of the incision into it could be easily inspected by reflected light. A probe could easily be passed upward toward the larynx. In this way an accurate determination of the absence of obstruction near the tracheal wound could be made.

The permanent removal of the tube was of course a problem always confronting us. Naturally before this could be done we were obliged to determine *positively* whether the child could breathe freely without its aid. As soon as slight respiration through the larynx became possible, the inner tube would be withdrawn and the outer one corked, thus forcing natural respiration. At first the tube could be closed but a few minutes, but this time we were gradually able to lengthen until, when the emaciation from the enteritis became marked, the cork could easily be left from 6 to 12 hours. Still the respiration was not perfectly free and at the end of the time the removal of the cork was a relief to the patient. It was therefore not con-



sidered safe to remove the tube and let the wound close.

For the sake of safety a method of what might be called slow removal was instituted. A very short, nearly straight tube was obtained and inserted. This tube was of such a length that it just extended to the tracheal wound, and could be plugged without obstructing respiration through the larynx. With this tube the breathing practice was continued until we were finally rewarded by having the patient go 36 hours breathing naturally. Had any dyspnea arisen the ordinary tube could easily have been inserted and no harm been done. In fact in the first experiment of the kind this had to be done. The patient having gone 36 hours without trouble, the tapes holding the tube were loosened and its expulsion left to nature. In a few hours the tube was found to be nearly outside of the wound and it was taken away, the opening into the trachea having already closed. The entire wound cicatrized rapidly and there has been no trouble with respiration since.

22 West Seventh Street.

### XXX.

## A CASE OF EPIDERMOID CANCER OF THE SOFT PALATE.

CAROLUS M. COBB, M. D.

BOSTON, MASS.

Thomas C., aged 44, a laborer born in Ireland, was referred to me September 15, 1899, by Dr. Mangan of Lynn, Mass. He had always enjoyed good health until about three weeks ago, at which time he first noticed some trouble with his throat. Thinking it was an ordinary sore throat, he did nothing for it at first, but as it did not improve in what he considered a sufficient length of time, he consulted Dr. Mangan, who referred him to me. So far as he knew, his family history was good, none of his relatives had ever suffered with any throat trouble or had any malignant disease, nor had he himself ever before had any trouble with his throat. His only complaint was of pain on swallowing; he had not lost flesh, and did not consider himself sick, being able to work every day.

On examination of the throat, a growth was found which involved the whole of the right half of the soft palate, circular in shape, and extended from nearly the center of the soft palate outward so as to include the whole of the right anterior faucial pillar. There was also a small growth on the right side of the base of the tongue, a little more than a centimeter in diameter. The growth on the soft palate was raised, especially at the edges, being in some places a centimeter above the surrounding healthy tissue and was beginning to ulcerate at the center. Scattered around the outer part of the growth were a considerable number of spots, dirty black in color and about the size of the head of an ordinary pin. Under the overhanging edge of the growth were a few larger ones. The nose, naso-pharynx, pharynx and larynx were apparently free from disease and the cervical glands were not enlarged.

Believing the growth to be malignant, I removed several sections from different parts of it and sent them to Dr.

Wright, the pathologist of the Massachusetts General Hospital, for microscopic examination. He reported that the sections sent him showed the growth to be an epidermoid cancer. I saw the patient at various times during the next four months, but I never succeeded in convincing him of the necessity of a radical operation for the removal of the growth, and in the light of the subsequent history of the case, I am not at all sure but that he lived as long without operation as he would have done if the growth had been removed. For while the cervical glands were not apparently enlarged during the first three months he was under observation, they finally became enlarged and would undoubtedly have been found to be infected had he been operated upon as soon as the diagnosis was made.

I did not see the patient between January, 1900 and the 28th of the following August, at which time I was called to his home, and found him emaciated to the last degree almost totally deaf, and so hoarse that he could not speak above a whisper. The soft palate, anterior faucial pillar, and the tonsil of the right side had entirely ulcerated away: there was a deep excavation on the right side of the base of the tongue, the epiglottis was nearly destroyed and the false cords were invaded and partially destroyed. I could not see the true cords to determine if they were affected. The growth had also extended upward to the naso-pharynx and had involved the Eustachian tubes. The patient lived two days after I saw him, and died of asthenia. No autopsy was permitted.

An interesting point about this case is that the growth gave the patient so little trouble, for it is reasonable to suppose that it had existed for some time before he began to complain of pain on swallowing, and that he only noticed the dysphagia after the growth had begun to ulcerate. He continued to do manual labor until within five months of his death, and gave up his work then only on account of general weakness due in part to his inability to take sufficient nourishment. In the way of local treatment, an application of lactic acid was made to the ulcerated surface at such times as I saw him and this seemed to have a favorable influence over the ulceration.

419 Boylston Street.

## XXXI.

### PAPILLOMA OF THE VOCAL CORDS—A REPORT OF FIVE CASES.\*

BY DR. W. L. BULLARD.

COLUMBUS, GA.

It is said by experienced laryngologists that papillomatous growths are more frequently found in the larynx than any other laryngeal neoplasm. Schnitzler<sup>1</sup> says this is especially so in children. Schrötter places its proportion at eighteen per cent., while Moure<sup>2</sup> agrees with Elsberg, Fauval, Bruns and others, in saying that it occurs in about fifty per cent. Mackenzie heads the list and puts it as high as sixty-seven per cent.

As a preliminary to the clinical report of my five cases I will quote from the Archives of Laryngology 1883, Vol. iv, p. 244, five cases reported by Dr. H. A. Johnson<sup>3</sup>. In his first case the patient died from suffocation at the end of ten weeks. In his second, a child sixteen months old, suffering with hoarseness and dyspnea from birth, expelled a papillomatous growth in a paroxysm of whooping-cough resulting apparently in a complete cure. In his third case, tracheotomy was done at the end of three years, and thyrotomy at the end of four years, the child finally dying of pneumonia. In his fourth case, a papillomatous growth in a child necessitated tracheotomy, and death resulted the following day. The fifth case was very similar, the child also dying the day following tracheotomy, the larynx being found to be filled with papillomatous growths. Mention of the above cases is only to show what a different result can now be had since the introduction of the anesthetic properties of cocain.

My first case, white child, five years old, was brought to me nine years ago. Father of the child said the boy could not sleep with any satisfaction, either to himself or parents. His breathing when awake was sterterous and

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\*Read before the Tri-State Medical Association of Georgia, Alabama and Tennessee, at Chattanooga Oct. 1900.

during sleep extremely so; he would cease to breathe, at which time patient had to be aroused, so as to catch its breath. The boy could not speak above a whisper. A laryngoscopic examination revealed a multiple papiloma of the ventricular band completely filling the vestibule of the larynx. I advised surgical interference. Father had no objection to this but could not remain in town just then, so he asked for medical treatment until his return, which would be three weeks. At that time, as well as now, I knew of no specific for cases of this kind, yet, I prescribed *thuja occident. fld. ext.* and syrup of the iodid of iron. On patient's return as expected I could see no beneficial change, so after cocainizing the throat and larynx with a twenty per cent. solution of cocain I readily removed the entire mass with a snare. The voice was instantly restored, though somewhat hoarse, but in a few weeks the patient seemed to be perfectly well, and so far has had no recurrence of the growth.

Case second, Mr. C. D., aged 48, consulted me three years ago. Could not speak above a whisper. Was extremely nervous and considerably emaciated. He was under the impression that he had consumption for which he had been treated. At the time of consultation he was taking cod liver oil. With the laryngoscope the real trouble was revealed. On the middle third of the right vocal cord, was a small papilloma the size of a pea. My friend, Dr. Ralcy Halsted Bell, of St. Louis, saw the case with me, and with his kind help I cocainized the throat and larynx, and readily snared off the growth. The relief was instantaneous and most wonderful. Articulation was immediately restored, which seemed to both frighten and delight the patient. He had not spoken aloud in so long that his voice appeared to astonish him. After disabusing the mind of my patient of all fear from having tuberculosis I prescribed as a stomachic, tincture of *nux vomica*. He returned home very much elated, and has until now had no return of the trouble. His age caused me to have some anxiety concerning the malignancy and a recurrence of the neoplasm, but I am glad to say that such was groundless.

Case III. Mrs. W. P., white, age 35, consulted me fourteen months ago. She was aphonic could not speak

above a whisper, and had considerable cough. The breathing was not impeded, yet she looked very much debilitated and worried. Had been told that she had bronchitis with a tendency to consumption. (I don't know by whom this wisdom was unfolded, whether by a follower of Esculapius or one of Job's comforters). This patient also had follicular or granulated lids and appeared to be predisposed to catarrh. An examination with the laryngoscope revealed a raspberry-like growth—a papilloma on the upper third of the left vocal cord. Removal of the growth was accomplished without much difficulty, performed endo-laryngeally after thorough cocainization of the pharynx and larynx. The voice was instantly restored to the gratification of the patient. She continued to improve and in a few weeks had regained her normal condition, which she retained up to a few months back, when she again presented herself with a cough and inability to articulate above a rasping whisper. On examination with the laryngoscope, a small papilloma the size of a pea was readily seen attached to the anterior portion of the right vocal cord preventing close approximation of the cords. The pharynx and larynx was cocainized with a twenty per cent. solution cocain muriate and with the snare the neoplasm was readily removed by the aid of the laryngoscope. As before the voice was instantly restored and in a few days the patient went on a visit to the mountains of North Carolina, and on her return home seemed to have regained her former health and, at the present time, has no evidence of any return of the growth.

Case IV. A negro child, male, four years old. Had been troubled for several months prior to coming to me, which was three months ago. I found the child with labored breathing and aphonic. Breathing could be heard all over the room. Sleep was greatly interfered with on account of labored inspiration. Child was frightened hence I had some trouble in making a laryngoscopic examination, though this was successfully done, revealing a multiple papiloma of the left cord or ventricle, filling the supraglottic laryngeal cavity. After thoroughly cocainizing the throat and larynx and quieting the child as much as possible, with the assistance of the child's father I easily extirpated the entire neoplasm with the snare. In

this case there was some undue hemorrhage, which caused me to imagine that I had attacked an angioma instead of a papillomatous growth. The blood flow soon ceased and microscopic examination of the pathologic specimen convinced me that it was a papilloma. The voice was instantly restored, but remained somewhat hoarse and rough. In a week's time the voice had assumed its normal resonance.

I could add to this report a number of other cases, which might be of interest, but the above perhaps are sufficient to convey the motive for which this paper is presented and, in closing it, I beg to announce that whenever I undertake to do a capital or an extreme delicate endolaryngeal operation I have no hesitancy in extending my most sincere gratitude to the memory of Signor Garcia, a teacher of music in London, for the introduction of the laryngoscope and a Turck of Vienna and Czermak of Pesth for its introduction to the profession and last, but not least, to Carl Koller, formerly of Vienna, now of New York City, for giving to the world one of the grandest endowments ever offered by man—the anesthetic uses of cocain.

<sup>1</sup>Klinischer Atlas der Laryngologie.

<sup>2</sup>Leçons sur les maladies du Larynx.

<sup>3</sup>Bosworth, Diseases of the Nose and Throat.

XXXII.

THE SURGICAL TREATMENT OF OTIC  
SCLEROSIS.\*

BY DR. RICARDO BOTEX.

BARCELONA.

TRANSLATED

BY ALBERT MILLER M. D.

ST. LOUIS.

For a long time I have been convinced that otic sclerosis is a tropho-neurosis. Its lesions are usually distributed in a capricious manner and rarely localized to the middle ear alone. As a rule disorders of the tympanum coincide with troubles in the labyrinth, the mastoid cells, the antrum, and sometimes even the nasal and rhinopharyngeal mucous membrane or bone.

The concomitant lesions are often slight but the nutritive trouble always exists, the atrophy of the epithelial, nervous and glandular elements is undeniable in spite of its insignificant and deceiving appearance and in spite of the fact that our methods of otoscopic and functional examination cannot prove that this tropho-neurosis has passed the limits of the tympanum to invade the labyrinthine capsule, even when the alterations have already seriously attacked the neuro-epithelial terminations of the auditory nerve.

In other words, I think that dry hyperplastic otitis or sclerosis of the ear is a panotitis which involves variously or chooses certain regions of the middle and internal ear according to pathologic hazards, and, though there may often exist former alterations of the tympanum and capsule, these lesions do not attack the main path of the sound-waves (ossicles, fenestra ovalis and rotunda),

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\*"Annales des maladies de l'oreille, du larynx, du nez, et du pharynx," August, 1900.



when the terminations of the auditory nerve exist, so to say, in a latent state.

Further, it is hardly necessary to say that I am not partial to surgical treatment for otic sclerosis.

Nevertheless, I have frequently tried to cure or ameliorate deafness due to dry otitis by means of various surgical proceedings used of late.

I have employed the following: (a) Perforation of the tympanum. (b) Mobilization of the stirrup. (c) Extraction of the hammer, anvil and tympanic membrane. (d) Deep mobilization of the stirrup after cutting its adhesions to the border of the fenestra ovalis. (e) Ablation of the stirrup.

It is necessary, in order to intervene with any chance of success, that the various tests of audition demonstrate the integrity of the labyrinth.

The watch, in contact with the cranial wall, should be perceived over the mastoid, the temporal and the zygomatic regions, the Weber sign lateralized to the deafer ear and the Rinné sign negative. Perforation of the tympanum should always ameliorate, however little the hearing may be. When these four conditions are present operation may be done, especially if audition has diminished to four centimeters for the watch and the whispered voice.

(A.) *Perforation of the tympanum.* If this little operation is for a diagnostic purpose I accomplish it with a pearl of chromic acid melted in the alcohol flame at the end of a stylet. In a few minutes perforation is attained. There is no need of preliminary cocain anesthesia. Only, if, after application of the caustic to the postero-inferior part of the tympanum, the patient complains of a lively smarting I place upon the membrane a bit of cotton saturated with a concentrated solution of cocain and the pain disappears almost instantly.

I have practiced perforation of the tympanum eight times in dry otitis; I have recourse to it when the canal is narrow and tortuous and in the extraction of diseased ossicles. The operative proceeding is almost that of Miot; it consists in removing the membrane completely and cutting off the handle of the hammer below the external apophysis. In spite of the most rigorous antisepsis I have

frequently observed suppuration of the lips of the tympanum which lasts for several weeks. The perforation narrows and membranous bridges form after cessation of the discharge.

At length, that is to say in about two years, the deafness is about the same as before operation. In two cases, it was even aggravated. In six other patients I obtained an improvement of a few centimeters with the watch and a few decimeters for the whispered voice, but after one year the patients were dissatisfied for they could hear little better than before operation.

(B.) *Mobilization of the stirrup.* I have performed this operation twenty-two times in dry otitis and more than fifty times in cases of adhesions, retraction, ankyloses and synechia following suppuration of the tympanum. In the latter cases, I have nearly always observed improvement in audition. In three cases instant improvement was considerable; the perforation was enormous and the stirrup visible within; I had to break some marginal adhesions and the patients at once heard the whispered voice at four to five metres and the watch at 50 centimeters.

Unfortunately in the cases of dry otitis the improvement was only transitory; even after re-operating I have had only deceptive results.

It follows then, from my experience, that mobilization of the stirrup in dry otitis is a bad operation. I have not used it for a long time in auricular sclerosis, for the traumatic stimulus occasions the migration of a certain quantity of embryonic elements which, spreading into the meshes of connective tissue and between the epithelial elements organize later on into adult connective tissue, which, added to the existing sclerosis, render the situation worse, the patient becoming in a year and a half deafer than before operation.

But I still often practice mobilization of the stirrup in cases of fixation of this ossicle following suppurative otitis media, especially in favorable cases. The results are very superior to those obtained in dry otitis, but sometimes it is necessary to intervene early and the patient remains almost as deaf as before, for it is sometimes impossible to break up all the adhesions of the stirrup and

the new connective tissue formation nullifies all our efforts.

(C.) *Extraction of the hammer, anvil and tympanic membrane.* I find it no advantage to do, like Garnault and Malherbe, Stacke's operation in order to remove the tympanum and the ossicles. I have had no experience in extraction of the hammer, anvil and tympanum by perforating the mastoid and removing the posterior-superior wall of the auditory canal.

When the canal is large it is always possible to remove the tympanum and the first two ossicles without preliminary osteotomy, thus making a simple harmless operation. Besides, as Dr. E. J. Moure affirms, "In the movement of extracting the hammer and anvil there is no doubt that the stirrup is mobilized sufficiently to improve the hearing of the patient."

But, after this indirect mobilization, the revival of the connective tissue hyperplasia ultimately aggravates the situation just as in the case of simple mobilization of the stirrup cited above.

It is useless to extract through the canal, a more or less extensive position of the attic wall to excise the hammer and anvil or to mobilize the stirrup in any case.

Chloroforming is likewise superfluous for these little operations.

For several months I have used for local anesthesia the following formula, exploited by Dr. Albert A. Gray, of Glasgow:

Alcohol	-	-	10	Grams
Anilin oil	-	-	10	"
Cocain hydrochlorate			2	"

With this solution complete anesthesia is obtained even when the tympanic membrane is inflamed.

I will not describe the technique which I employ, but will add that, if antiseptis has been careful, at the end of four or five weeks cicatrization is perfect without suppuration. Unfortunately there often sets in a sero-purulent discharge which produces thickenings and irregular circular bands which envelop the postero-superior part of the tympanum, that is to say, in the neighborhood of the oval window, and the branches of the stirrup, masking it in such a way that it is almost impossible to find it and

mobilize it again. The nodular tissue which covers the region must be cut blindly, and the stirrup may be loosened or one of its branches broken if extreme care be not taken. Furthermore, there is formed about the tympanum a new membrane usually thinner and more adherent to the promontory which it is necessary to remove two, three, or even four times subsequently within a few months.

The patients often lose patience and finally refuse to submit to new operations which, as they are repeated, become more and more painful.

As to the results I have obtained, here is an abridged summary.

Out of ten cases of extraction of the tympanum, hammer and anvil, I had permanent improvement of the hearing in but one case and that was only slight. In another case (a man of 55) where audition had diminished to one centimeter for the watch and eight centimeters for the whispered voice, the patient became completely deaf after the operation. It must be admitted that there was produced a vestibular, perhaps cochlear, hemorrhage which destroyed the neuro-epithelial terminations of the auditory nerve.

The hemorrhage was probably provoked by the luxation and perhaps by the driving in of the base of the stirrup into the vestibule's interior, in course of the attempts at extraction of the anvil, the incudo-stapedal articulation being more firm than usual.

With my patients, at the end of six to ten months, the improvement of three to seven centimeters for the watch and ten to thirty centimeters for the whispered voice disappeared.

The results which I obtained in the last eight cases were mediocre, or else I had an unfortunate series.

*D. Deep mobilization of the stirrup after cutting adhesions to the border of the fenestra ovalis.* This operation is generally possible only after preliminary resection of a portion of the external attic wall. I always do this preliminary intervention through the canal and under local anesthesia.

Naturally, it is necessary that the patient be not too sensitive, for the operation, when the canal is large, with

Mounier's instrument, is rather painful and I have often been obliged to postpone the operation after removing two or three lamellae of bone, the patient falling in a faint.

Further, bleeding interferes much with operations on the branches of the stirrup and I often take two sittings. This method is fatiguing both to patient and physician, but I was able once to do it without preliminary section of the attic wall by cutting off the handle of the hammer and ablating the tympanum, introducing my small intratympanic mirror shown in 1890 at the Congress of Berlin. I was then able to make out the situation of stirrup and with the little bayonet-shaped knives, shown at the same Congress, I incised circularly the tissues which surrounded the stirrup to its base.

The result obtained in the latter cases was eleven centimeters for the watch and fifty centimeters for the whispered voice, the patient hearing the watch in contact with, and the voice two centimeters from the ear before operation. But, at the end of two months, the patient was almost as deaf as before the operation.

In the other cases operated upon with resection of the attic wall through the canal the result was insignificant and almost *nil* in two cases.

(E.) *Extraction of the stirrup and other ossicles.* I have for a long time hesitated before doing this operation the results of which gave little encouragement at last. Recently, I decided to undertake it in a patient with an old sclerosis with a calcareous tympanum, who could only hear whispered voice at the meatus, the Rinné being negative, and the watch heard over the mastoid. The result was absolutely negative though I extracted the stirrup without breaking any of its branches or damaging the attic wall,

I think, then, that Politzer has reason to deny the value of extracting the stirrup, the same as its mobilization. According to the Vienna Professor the fixation of the stirrup results from the formation in the membranous labyrinth of serous tissue which reaches the stirrup, the ablation of which would not prevent obliteration of the fenestra ovalis.

I conceived great hopes from this operation during my experiments upon animals in 1890, experiments which

were the subject of a long report to the Berlin Congress. To-day, notwithstanding my early optimism, I recommend this intervention only with extreme reserve, and only when the fixation of the ossicle is caused by cicatrices or adhesions following suppuration of the tympanum, when it can be effected without danger, the labyrinth and its capsule being unharmed in these cases.

Then, in ankylosis of the stirrup following dry otitis, the results are various and more often nil two years after the the operation, for the state of the fenestra rotunda and labyrinth are not known during the life of this patient.

It does not appear proven to me that the only patients who would benefit by ablation of the tympanum and ossicles are those in whom the Rinné test is negative, which according to Behrens proves that the affection is limited strictly to the middle ear. This fact is perhaps often true but in other patients audition is much impaired and perforation of the tympanum gives no improvement, and if the tympanum and first two ossicles be ablated the result is insignificant, which proves that the tropho-neurosis has passed beyond the confines of the tympanum.

My statistics are absolutely discouraging for the results obtained in sclerosis of the middle ear are at best only mediocre, often insignificant and eventually almost always negative. Besides, it may happen that the operation aggravates the deafness considerably. Perhaps later on, when the indications are more precise and the technique perfected, better results will be obtained; but just at present it is not necessary to make any exception save for the consequences of middle ear disease.

Always, given a bad prognosis for dry otitis abandoned to itself, extraction of the tympanum and ossicles may be attempted but without making any predictions, for there may exist more profound lesions and the operation may determine later a proliferating nodular new-formation, as I said in 1890 at the Berlin Congress. In fact I expressed myself then, apropos, to my experiments upon animals, thus:

Often, when the irritation of the periosteum of the promontory, which surrounds the fenestra ovalis, is not severe, the fenestra ovalis only narrows more or less, leaving sometimes a very small opening through which

barely passes the small shank of the stirrup. Then it always happens that the base of the stirrup, situated more deeply, ossifies completely, increases greatly in thickness and welds itself completely to the real fenestra ovalis. This would explain the mechanism of certain ankyloses of the stirrup in man without assuming a special disease, but simply by a further extension of the periosteal inflammation of the stirrup base and borders of the fenestra ovalis in interstitial catarrhs of the mucous membrane.

Finally, the results announced by most authors are nearly all observed some weeks or months after operation. As the traumatism produces congestion with serous and embryonal transudation which gives flexibility to the tissues for some time and consequently facilitates movement at the articulations of the ossicles, it would be necessary to wait two years. I am persuaded that then nearly all patients affected with dry otitis and so-called cures by operation will hear less or no better than before operation.

In the course of my anatomic researches on the extraction of the stirrup in animals (1890), Puncture of the fenestra ovalis (1896 and 1897), and latterly on the absence of valves in the tympanum (1899), I have often examined the auditory organs of the cadavers of individuals past fifty; the young subjects were reserved by the students for disarticulation and study of osteology. The cadavers were taken at hazard and it was impossible to learn, with plainly sclerotic and adhesive lesions of the tympanum, if the individual thus affected had been more or less deaf in that ear. As in Spain there does not exist a single clinical ear hospital where autopsies can be made, the anatomo-pathologic study of otic sclerosis is almost impossible from the point of view of symptoms during life.

As otic sclerosis is common enough from 40 to 60 years and the lesions of the middle ear which it produces easily recognizable, I was able to remark that every time I found traces of chronic interstitial inflammation of the middle-ear mucous membrane, with ankylosis, of the stirrup and formation of membranous strings in the middle ear, the labyrinth and principally the external wall of the

vestibule were always simultaneously affected with the same trophic troubles. In one case where the lesions, of the middle ear were insignificant, (a subject of 60 or 70 years) I remarked that the vestibule and the first portion of the cochlear canal were considerably affected with hyperostosis, the base of the stirrup forming a jutting promontory in the interior of the labyrinth enclosed by a projection formed by the ossified annular ligament, and the orifice of the cochlear canal being transformed into a narrow opening.

In another anatomic specimen the fenestra rotunda was indicated by a small hole with a hard bottom, the membrane of that opening being completely absent. It goes without saying that in that specimen there existed traces of sclerosis of the middle ear.

In a third preparation where the stirrup was firmly ankylosed by calcareous infiltration of the annular ligament and adhesions of the crura of that ossicle around about the border of the hyperostosed fenestra ovalis; the interior of the cochlea was somewhat narrowed by a new formation of spongy osseous tissue distributed irregularly.

Finally, in a fourth decalcified specimen, horizontal sections across the capsule of the labyrinth showed the following:

Interior of the vestibule narrowed in every direction by hyperostosis of its walls; ampullae of the semicircular canals flattened irregularly; horizontal canal engorged at its peripheral extremity and a portion of the cochlea near the vestibule filled, in the space between the cochlear canal and vestibular canal, with connective tissue in the form of numerous slender filaments, partly calcified.

As I did not make a serious anatomic study of the question I only saw a few other cases where the lesions were less accentuated. I believe myself sufficiently informed, although I have only been able to study the pathologic anatomy of labyrinthine lesions of otic sclerosis in a summary way. I came to the conclusion that dry otitis is a chronic, interstitial, inflammatory lesion, nearly always a panotitis, of a trapho-neurotic nature, and that sometime the lesions are more extensive in the labyrinth than in the middle ear.

These lesions, as Prof. Politzer has said, have their



principal seat in the vestibule on the internal aspect of the fenestra ovalis and spread slowly from there toward the tympanum, the cochlear canal and semi-circular canals in a very capricious and irregular manner and operation upon the tympanum is usually superfluous. I will finish with the following conclusions:

1. In dry otitis, in order to have the right to try surgical treatment in spite of its almost constant inefficacy, it is necessary that cranial perception of the watch be preserved, the Rinné negative, the Weber lateralized to the diseased side and that perforation of the tympanum ameliorate, however little, the audition.

2. When the canal is large, permanent perforation of the tympanum may be done, but although sometimes a slight audition improvement is obtained, at the end of two years even supposing that the adhesions have been destroyed, the patient becomes as deaf as before operation.

3. Mobilization of the stirrup in dry otitis is a completely useless operation for the improvement obtained is always transitory. This operation is only justified in the sequelae of suppuration and, even in these cases, the amelioration obtained after breaking up the adhesions of the stirrup, is not great nor lasting.

4. Extraction of the hammer, anvil and membrane can be done perfectly through the canal when the latter is large. The results obtained are mediocre or insignificant in dry otitis. The remote effects are almost negative; and a considerable aggravation of the deafness may follow.

5. Deep mobilization of the stirrup may be done without Stacke's operation. It is sufficient to remove through the canal a portion of the attic-wall. In dry otitis the results from this operation are usually slight and rarely permanent.

6. Extraction of the stirrup, in spite of great hopes conceived, is a bad operation. The results in dry otitis are almost nil.

7. For the surgical treatment of dry otitis, modern otology has moved in the wrong direction, for, as it is probably a tropho-neurosis and the lesions are usually panotitic, all means employed to modify the organs of emissions of sound-waves toward the labyrinth, cannot prevent the latter, which is almost constantly involved, from becoming more and more affected.

8. The experiments on animals which I have attempted are not all applicable to man, for in animals the labyrinth is intact and, in similar cases in man, it is almost always more or less affected, notwithstanding the fact that our means of investigation, still imperfect, cannot always demonstrate it.

9. The same experiments made by me upon animals in 1890 and repeated in 1896, prove the inefficacy of surgical treatment in otic sclerosis, since, by irritating the margin of the fenestra ovalis, the base of the stirrup ossifies completely, welds itself to the fenestra ovalis and the latter is narrowed by thickening and ossification of its border, due to the dissemination of the interstitial mucous inflammation.

10. Since it is almost certain that otic sclerosis is a tropho-neurosis, with formation of connective and osseous tissue, principally in the labyrinthine capsule, round about the fenestra ovalis, in the cochlear canal and even in the helices of the cochlea, the neuro-epithelial terminations of the auditory nerve being more or less involved, surgical treatment of sclerosis of the ear is in nearly all cases useless.

### XXXIII.

## THE PATHOLOGY, DIAGNOSIS, SPECIAL PRO- PHYLAXIS AND TREATMENT OF TUBERCU- LOSIS OF THE MIDDLE EAR.\*

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In the comparatively small space of the cavum tympani, rendered still less by the ossicles and numerous reduplications of the lining mucosa, the extension of tuberculosis to the antrum and adjacent cavities is facilitated to the highest extent. In the majority of cases the infective material is carried to the middle ear by way of the Eustachian tube. The resultant primary morbid changes are characterized by the development of the tubercles in the mucous membrane.

When the tubercles are limited in number and scattered, the intervening tissue is apparently normal, while should they be confluent, the area between the cell aggregations is obliterated, or is composed of granulation tissue insufficiently supplied with nutrient vessels, and there develops an inflammatory fibrous hyperplasia of a low grade. Under these circumstances the mucosa is but slightly mammillated and presents the appearance of a compact, uniformly diseased surface. Primarily the tuberculous nodule, as seen on the promontory or in the immediate vicinity of the tubal opening, is red in color and slightly elevated above the surface. The mucous membrane is pale gray from leucocyte infiltration.

As the pathological changes enumerated are usually not productive of symptoms sufficient to attract the attention of the patient, the otologist rarely sees the infection in this

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stage, unless the tympanic membrane is also involved and there is a coincident myringitis. When this occurs, the drum head still remaining intact, there develop the small millet-seed projections not differing from those of miliary tuberculosis in other organs. Kretschmann has found the membrane studded with miliary tubercles, which ulcerate early and produce the more or less characteristic sieve-like perforations seen in this disease. In three cases I have observed isolated tubercles break down, and but one or two perforations resulted, but more frequently, and especially when the disease is consecutive to pulmonary tuberculosis, caseation is rapid and the drum head is destroyed in its entirety. When otorrhea is first noticed by the patient the infected tissues have begun to break down, and yellowish, opaque areas of cheesy degeneration are seen scattered over the promontory.

Unlike simple granulation tissue, there is a constant tendency to retrogressive changes and the newly formed tissue occupying the tympanic area shows no tendency in the majority of cases toward cicatrization, but the development ceases at the fibroplastic stage, the nutrition, always feeble, is rendered more so, and degeneration accompanied by secondary infection with pus organisms is a constant feature. It should also be taken into consideration that ulceration of the mucous surfaces inevitably occurs from the breaking down and disintegration of the tuberculous mass and then the base and edges of the ulcer are also carious. Invasion of adjacent tissues is highly probable, the infection spreading from the original area into the surrounding structures; at the same time the central focus disintegrates, as in a case reported by Haenel, in which tuberculous caries of the bone was followed by rupture of both labyrinthine windows, illustrating the centrifugal extension of the limited tympanic infection is a case recorded by Piffel in which there were secondary growths extending from the middle ear into the cranial cavity. The mastoid cells were replaced by a mass of tuberculous tissue, the ossicles were destroyed, the anvil was lying loose in the granulation tissue, and the bulb of the jugular vein was thrombotic.

The membrana tympani may become studded with tubercles which later undergo caseation, or it may present

localized areas of hyperemia with a moderate degree of round cell infiltration, most marked in the posterior superior quadrant. Following this condition, which, however, may remain stationary for a considerable period, the regenerative power is lost and the membrane rapidly melts away. Scheibe saw six cases in which this feature was well marked, the affection being characterized by extensive destruction of the tympanic membrane. Again, the drum may appear normal or but slightly clouded until late in the disease, in these cases the infection remaining for a long time localized at the promontory or near the tubal opening, or, as pointed out by Winkler, there may be an old perforation, due to a non-specific otorrhea, through which the parts become infected by the tubercle bacilli.

The ossicles, especially the malleus and incus, are usually subjected to the brunt of the disease and in my experience, it is not infrequent to have them exfoliated in the latter stages. But recently, I saw a case of grave pulmonary phthisis in which the right tympanum was extensively involved and the patient found the entire ossicular chain adhering to the pledget of cotton which he had been using to remove the discharge. While the tuberculous inflammation of necessity involves the bony boundaries of the tympanic cavity, the ossicles become necrosed before this occurs and are occasionally found in the detritus. The stapes is not so frequently affected as the malleus and incus, but in the latter stages even the foot-plate of the stirrup may become disintegrated, thus opening an avenue of infection by which the inner ear may become involved. Liaras reports a case in which the stapes was freed from the oval window, while Schutz in one case found the tympanum completely filled with small gray tubercles which had dislocated the ossicles and the new growth had extended into the external canal. Instead of necrosis, as shown by Bezold, there may be hyperplasia of the foot-plate of the stapes, and the hearing is greatly impaired when this occurs.

When necrosis of the bony walls takes place, the promontory is usually the first point involved and the process extends to other points of the osseous tissue, tubercular changes taking place in the facial nerve and, as pointed out by Randall, the destruction may be so great as to in-

volve the carotid artery and cause death by hemorrhage, seven deaths having been reported from this cause. The necrosis upon the inner wall of the tympanum may readily be detected both by visual examination and with the probe, but in a class of cases to which Kretschmann has called attention, it resembles to a marked degree a mass of fibrinous deposit, under which is denuded bone usually surrounded by granulation tissue.

The diagnosis of aural tuberculosis is of serious import, as upon the early recognition of the disease will depend to a great extent the future issue of the case. It seems best to study this aspect of the subject under three headings: First, the recognition of aural tuberculosis in a subject without general evidences of the disease, but in whom for obvious causes the middle ear affection is suspected to be of a tuberculous nature; secondly, the recognition in an individual suffering from pulmonary tuberculosis of involvement of the middle ear and, under this same heading, the diagnosis of the cause of otorrhea existing before the pulmonary affection developed. In the third class we have the differential diagnosis of a tuberculous otorrhea from that occurring in conjunction with syphilis, lupus, diabetes, and new growths.

In the first class of patients referred to, there is usually a slight watery discharge from one ear, which has existed for several months, appearing without the knowledge of the patient and, at no time, has there been the slightest evidence of pain. Physical examination of the respiratory organs shows nothing suspicious; the patient may be of good physique, but usually is of somewhat under weight and anaemic and, in addition, he will give a history of pulmonary tuberculosis in near or distant blood relatives. The hearing is but slightly impaired and on examination the membrana tympani will present several small perforations, round in contour, with the edges thick and everted and instead of the congested appearance seen in ordinary otorrhea, the drum membrane will be of a blue white color, presenting somewhat the appearance of ground glass, with the addition of an oedematous element. Under these circumstances the insidious development of the discharge and the absence of pain strong emphasis being placed upon this point by Oaks, who says that, although the

otorrhea is of recent date, if there is no pain or other manifest symptoms except the discharge, a tuberculous etiology is suggested should immediately direct the attention of the otologist to the nature of the case. The importance of a prompt diagnosis in the incipiency of the disease cannot be emphasized too strongly, as these are the cases that present the most favorable outlooks as regards treatment.

Of the greatest importance and the crucial factor in the diagnosis of tuberculosis of the middle ear, is the recognition of the tubercle bacilli in the aural discharge. When the organisms are numerous, they can readily be recognized by any of the usual stains, but occasionally it is necessary to use what Milligan calls the best and most reliable means of establishing the diagnosis, properly conducted inoculation experiments. As the bacilli are found more frequently in the residual pus in the tympanum than in the canal, it is essential that the material used for examination be obtained from the deepest part of the chamber. A negative diagnosis cannot be made by the absence of organisms in a single examination. Frequently the material obtained from the ear must be repeatedly examined before the bacillus is found; especially is this necessary in the later stages, when there is profuse purulent discharge due to secondary infection from streptococci.

In the patient with pulmonary or other forms of tuberculosis, and with subsequent otorrhea, the diagnosis is greatly facilitated, and no serious difficulty need be apprehended in estimating the true nature of the case. A difficulty, however, arises in cases of purulent otorrhea with profuse discharge and extensive tissue disintegration, in which general tuberculosis develops at a latter stage. It is oft-times difficult to detect the bacilli, as the usual pus organisms present prevent the recognition of the tuberculous element. Under such conditions the characteristic local features are absent and pain may be present, as in a case reported by Collins, in which during the course of acute miliary tuberculosis the patient presented the ordinary symptoms of an acute otitis media. The diagnosis in these cases is made by the general condition of the patient, the presence of laryngeal or naso-pharyngeal tuberculosis and various local manifestations suggestive of this affection, such as the rapid development of facial

paralysis, the intolerance of the middle ear to local application, and, as suggested by Milligan, the enlargement of the periotic ganglia.

The differential diagnosis from syphilis can be determined by the history of the case, the presence or absence of syphilitic stigmata elsewhere, the absence of the tubercle bacilli in the aural discharge, and the rapid disintegration and ulceration, not only of the middle ear, but also of the external canal in the specific affection. When otorrhea develops during the course of both syphilis and tuberculosis, as in a case reported by Bonnier that of a tuberculous and syphilitic patient, it may be extremely difficult to ascertain the real nature of the aural lesion. Careful bacteriologic investigation will, however, clear up the diagnosis. Lupus involving the middle ear is rare, but as it occurs only in conjunction with the manifestations of the disease upon the auricle and face, it will require no further mention here. Tuberculous otorrhea must sometimes be distinguished from that occurring during the course of diabetes. I have seen one case of this nature in which the urine contained a large amount of sugar and there was also evidence of beginning pulmonary tuberculosis; the otorrhea, however, in this instance was not tuberculous in nature. When granulation tissue is abundant and extends into the auditory canal in tuberculous otorrhea, the question will occasionally have to be determined as to its relation to other new formations. Visual examination will be of little value, and it is necessary to remove some of the tissue for microscopic examination and the presence or absence of the tubercle bacilli must also be determined.

As the natural history of aural tuberculosis is such that extensive alterations may and usually do take place before attention is called to it, the usual prophylactic measures adapted to the prevention of the affection in other parts are rarely applicable. When a tuberculous individual, however, has had at any time acute or chronic suppurative otitis media, it is always advisable to exercise special prophylactic measures directed to the avoidance of aural infection and especially so when the nasopharynx or tonsils are involved. Even in laryngeal tuberculosis without aural disease great care should be taken to prevent infection through the Eustachian tube.



It is unnecessary here to more than mention the general prophylactic measures, such as change of climate, environment, nourishing food, etc. Of special prophylactic importance in this connection is attention to any abnormalities or morbid changes in the nose or throat, whether tuberculous or otherwise and prompt attention should be given to attacks of myringitis or acute otitis media. The nose and throat should be carefully cleansed with an alkaline antiseptic solution, and all procedures tending toward forcing infected mucus through the tubes, as by the Valsalvian method of self-inflation, must be expressly prohibited. By observing these rules much can be done to prevent infection of the middle ear on the part of the patient and, following out the same indications, it should be the duty of the physician to absolutely avoid under all circumstances the use of the Politzer air douche. I firmly believe that the middle ear is infected in this manner more often than is generally thought, by the endeavors of the physician to relieve an intercurrent simple salpingitis in a tuberculous individual.

As I have emphasized in a previous article, the treatment of aural tuberculosis is essentially that of the treatment of tuberculous disease elsewhere. The signal note of success, if success is to be had at all, is in the use of such general constitutional remedies as seen best suited to the individual conditions. The hypophosphites, strychnin, creosote and its congeners are indicative of the general remedies to be used. Nourishing food and change of climate and environment are just as necessary in aural tuberculosis as in the pulmonary form. Buck reports a case of early tuberculosis in which local treatment was not used at all, but the disease was arrested by sending the patient for a long stay in the Adirondack mountains. Tuberculin has been used by Lucae, Bezold and others, but, as in other forms of tuberculosis, no appreciable benefit seemed to be derived from its use, and in some cases there appeared to be considerable harm attending its administration.

Locally, the treatment may be considered under two headings, surgical and medical and the choice will depend upon the extent of the aural involvement the presence or absence of tuberculosis elsewhere and the general physical condition of the patient. Usu-

ally surgical measures are contraindicated except in those very few cases in which there is no ascertainable tuberculous focus elsewhere and in which the area of aural infection is limited. When the condition of the patient is such that an operation is justifiable, it is essential that every portion of the diseased tissue be removed and a free open wound be allowed to remain. Even if the patient is in fair condition physically, it is of great value to place him upon general constitutional remedies and a nourishing diet for several weeks before recourse is had to operative measures, much better results being obtained in this manner than when the diseased tissue is immediately removed without special constitutional preparation.

The local treatment may be summed up in the axiom, keep the parts clean and meet indications as they arise. The middle ear should be thoroughly cleansed with hydrogen peroxide, all pus and debris removed, and granulation tissue snared away or kept down by chromic acid. A nonirritating antiseptic powder may then be lightly dusted over the parts, or, what is still better and has given the best results in my hands, has been the local application of a thin film of iodoform and the use of iodoform-gauze packing extending well into the middle ear. Free drainage is favored by this method and, if the parts are kept thoroughly clean, quite favorable results are obtained. Buck douches the ear with tepid water and then applies a nonirritating antiseptic powder.

Following the successful results obtained from the use of lactic acid in laryngeal tuberculosis, it may be used here in the same strength and manner, preliminary cocaineization, however, being necessary before any such applications are made. Any of the remedies used in non-tuberculous otorrhea may prove of service, such as chlorid of zinc, balsam of Peru, creosote in alcohol and glycerin, and absolute alcohol and carbolic acid, but it should always be kept in mind that, whatever form of local treatment is adopted, general constitutional measures are absolutely imperative.

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## XXXIV.

### LEUCOPLAKIA.\*

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PERRIN, in opening the discussion, calls attention to the fact that leucoplakia is not limited to the mucous membrane of the mouth, but is found also upon that of the vulva and prepuce, the urinary tract, anus, pharynx, larynx, and middle ear. The name leucoplakia (leucoplasia) is applicable to all the white *dyskeratoses*; they are produced by a chronic inflammation of the derma, excited or maintained by repeated and prolonged irritation.

*Relation of Leucoplakia to Syphilis* According to Perrin, a distinction should be made between the leucoplakias of the internal aspect of the cheeks, the lips and those of the tongue. The first are found frequently but not always in syphilitics and are usually due solely to the use of tobacco. The lingual patches are essentially of syphilitic origin: Syphilis should be looked for in all cases. Perrin does not, however, deny the existence of non-syphilitic leucoplakias of the tongue.

BARTHELEMY does not make this distinction. In 83 cases 68 were known to have syphilis.

GAUCHER and SERGENT state categorically that buccolingual leucoplakia is always of syphilitic origin: 90 to 95 per cent show acquired syphilis; the remainder have "conceptional" or hereditary syphilis.

These conclusions are opposed by the statistical results of FOURNIER. In 324 cases of leucoplakia, he found syphilis 259 times. He believes that Gaucher and Sergent include in their list cases of sclerotic syphilitic lesions, which are not leucoplakia. This latter is a parasyphilitic

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\*Discussion in the Section for Dermatology and Syphilology of the Thirteenth International Medical Congress, Reported in the Gazette hebdom de med. and de chirurg, 1900, No. 74.

lesion, which should be separated from all the forms of tertiary glossitis.

Fournier and Du Castel regard the term leucoplakia as badly defined; the latter distinguishes two forms, one of a gray color which is a syphilitic affection, the other white, which is para-syphilitic.

*Influence of Tobacco upon Bucco-lingual Leucoplakia.*

The action of tobacco is marked, since in 100 cases, Fournier found 97 smokers. One might think *a priori* that leucoplakia is for this reason rare in women, nevertheless ZAMBACO found in Constantinople the same difference between the two sexes as in Paris. Leucoplakia remains however a benign affection in women. Tobacco of the East is less irritating than French tobacco, and leucoplakia is not very common in the Orient. It should be mentioned that tobacco is especially harmful in persons who have had syphilis, as shown by a case of Barthelemy of a man who had smoked thirty cigars a day for thirty years, and who showed no sign of leucoplakia; he subsequently acquired syphilis and two years later showed a leucoplakia.

*Effect of Antisyphilitic Treatment.*

According to Barthelemy, injections of mercury may lead to a complete cure. Such treatment generally, however, simply arrests the development of the affection and renders degeneration less frequent.

*Relation to Epithelioma.*

According to Perrin, the essential lesions of leucoplakia, are the keratinization of the superficial epithelium, the formation of a layer of cells provided with keratohyalin (*cutization* of the mucosa) and in the derma a cellular infiltration tending toward sclerosis. The process of keratinization is furthermore frequently irregular. Later, leucoplakia becomes complicated with papillomatous formations which may or may not develop into cancer. Cancer may on the other hand develop without a preceeding papilloma. Epithelioma in general begins at the level of the fissures and ulcerations, in the dekeratinized regions, sometimes in the center of the horny layer by formation of epidermal masses.

According to Gaucher and Sergent every leucoplakia represents an intermediate stage between syphilis and

epithelioma. In a case of leucoplakia with a smooth varnished surface, they found a structure identical with that of a horny papilloma with epidermal globules.

The frequency of epithelioma following leucoplakia is marked; according to Perrin in 25 per cent of the cases. Fournier gives 30 per cent; others 50 per cent. These figures are the minimum; according to A. Fournier, in many cases of epithelioma, the antecedent leucoplakia is overlooked.

The development of epithelioma is slow and more benign than in cases not following leucoplakia.

*Treatment of Leucoplakia.*

The prophylactic treatment consists naturally in the suppression of tobacco in the syphilitic cases.

Gaucher and Sergent recommend applications twice a day of bichromate of potash (treatment proposed first by WATRASZEWSKI) continued for months and years. Papillomatous excrescences are to be treated with the galvanocautery. Zambaco practises cauterization with the acid nitrate of mercury. Perrin removes surgically the affected tissue wherever possible.

## ABSTRACTS FROM CURRENT OTOLOGIC, RHINOLOGIC AND LARYNGOLOGIC LITERATURE.

### I.—EAR.

#### **Lateral Sinus Thrombosis and Leptomeningitis Both Complicating Acute Suppurative Otitis Media; Complete Perforation of the Cranial Wall Above and External to the Antrum.**

PHILLIPS, WENDELL C. M. D. (*Med. News*, April 21, 1900.) Case 1.—Male, fifty years, previously had slight suppuration in left ear, which had stopped three weeks before. Had pain localized over mastoid, but extending over left hemisphere and over lateral and longitudinal sinuses; chills and vomiting for two weeks; several rigors at time of examination; no mastoid swelling, and but little tenderness; pulse 110; temperature, 101.4; mucopurulent discharge from canal. Diagnosis of infective sinus disease, and immediate operation. No pus found in mastoid; bone very flinty. Lateral sinus opened one and a half inches; filled with clot. Incision extended from above and posteriorly to the angle through the sigmoid and well down toward the jugular bulb, and all granulation masses and clot removed. Sinus and wound packed with iodoform gauze. Shock was considerable, but recovery was complete, owing doubtless to the early diagnosis.

Case 2.—Female, admitted to the hospital with temperature of 103 F., as a case of acute mastoiditis and an ice coil applied. The pain subsided, and patient was up and about, complaining but little. On the sixth day after entrance at 4:30 a. m., she became delirious, pupillary reaction sluggish, limbs rigid and semiflexed, respiration shallow, and soon complete unconsciousness. Pulse at first very rapid, then became slow. Preparations were made for an operation, but condition became so much worse that it was abandoned, and death occurred at 10:30 a. m. the same day.

At the autopsy the tympanum and mastoid were found full of pus; the sinuses were healthy; there was subarachnoid infiltration of pus indicative of a general lep-

tomeningitis. The entire mastoid, except at the top, was one large abscess cavity. The internal wall was entirely gone, and the dura had been perforated posterior to the tegmen tympani; brain not involved.

In reviewing the case, the author says the ice bag ought not to have been used, since it masked the symptoms, whereas an early operation would probably have saved life. That so extensive a leptomeningitis could occur with so few meningeal symptoms either of eye or of the mental faculties is remarkable. The sudden shock followed by death was probably due to the rapid escape of pus through the perforation.

"In all cases of mastoid inflammation in which there is no external swelling or even marked indications of disease the ice coil should be resorted to with caution."

*Richards.*

**The Value of Electrolytic Dilation of the Eustachian Tubes In Chronic Tubal Catarrh and Chronic Catarrhal Otitis Media.**

DUEL, ARTHUR B. M. D. (*Am. Jour. Med. Sciences*, April, 1900.) Many cases of chronic acute catarrh begin with an inflammatory hyperplasia in the narrow Eustachian tubes, producing a mechanical and functional stagnation and a lowering of air pressure in the tympanum. This being the case, it becomes evident that the most important point in this treatment is to ventilate the tympanum by the early establishment and constant maintenance of the patency of the Eustachian tube. In an early stage of tubal obstruction the Eustachian catheter and stimulating vapors answer, but later, when the exudate has begun to organize into fibrous tissue, it has been found necessary to use bougies to overcome the obstruction; these have been of whalebone, metal and cotton, and used in many cases with marked success.

To bring about the absorption, of the exudate the author has devised a method by electrolysis, which, although not original in idea, having been previously used by W. E. Stevenson and Robert Newman, is original so far as the practical working out of the details is concerned.

The bougies are made of gold, and correspond in size to Nos. 2, 3, and 4 of the French scale. The smaller sizes



are usually used. It probably does not matter so much about the size as that the current should be kept in contact with the hyperplastic tissue long enough for the electrolytic action to take place. The bougie is drawn through a small pure silver catheter until the oval head fits snugly in the opening at the tip. The other end is connected one and one-half inch from the opening by a delicate handle with the negative pole of the battery.

The catheter, after being carefully bent so that it will fit accurately in the mouth of the Eustachian tube, is insulated by winding a narrow strip of rubber tissue spirally from tip to ring.

This being renewed each time it is used, the catheter and bougie being boiled, cleanliness is insured.

The nose is cleaned, and anesthetized with a ten per cent solution of cocain.

The patient is connected with the positive pole of the battery by an ordinary contact electrode held in the hand. The negative pole is attached to the bougie as just described. The tube is bougied in the usual manner, the bougie being pushed along until it meets with a definite obstruction. Instead of forcing through this by heavy pressure the current is turned on up to form one to three m. amp., according to the sensation of the patient, and after twenty seconds to a minute the bougie usually will be felt to pass on through the softened stricture with a gentle pressure. At the same time the patient will usually hear "bubbles breaking in the ear." If the desired result is not obtained at the end of a minute or two, no greater pressure should be used, but more current strength turned on.

The author does not use over five milliamperes current strength, nor a contact of longer than five minutes at a sitting. This is repeated at intervals of one week to one month, being guided as to its frequency by the result as indicated by inflation every other day. Two to four sittings are usually sufficient. The battery should have from thirty to fifty volts, and should be supplied with a good rheostat and milliammeter. Some fifty cases are recorded, and the author regards this method of removing an organized exudate preferable to any other, one application is frequently sufficient, since it is more rapid,

more efficient, the results more permanent. All narrow tubes should be restored to their normal calibre, and where the narrowing is due to an organized inflammatory exudate, the best means of accomplishing this is by electrolysis. *Richards.*

#### **Eustachian Catheterization.**

RICHEY, S. O. M. D., (*Jour. A. M. A.*, May 19, 1900.) The catheter should be used in all cases in preference to the Politzer bag or the Valsalvan method, as damage can be done with them.

Properly inserted, the catheter is free from danger, and may be used for the introduction of solutions into the tympanic cavity, or for the withdrawal of secretion from the Eustachian tube by suction. *Richards.*

#### **Chronic Otitis Media Resulting from Contamination in the Treatment of Acute Otitis Media.**

TODD, FRANK C. (*International Clinics.*) Vol II, Tenth Series. The writer contends that the piston syringe commonly used by aurists in the routine treatment of suppurations of the middle ear is a dangerous instrument.

Investigations showed that germs are prevalent in quantity and in numerous varieties upon the point and washer of the syringe cultures taken from syringes belonging to five different aurists demonstrated the presence of the staphylococcus pyogenes albus, the streptococcus pyogenes, the diplococcus of pneumonia and the bacillus tuberculosis. One of the syringes was sterilized and then used daily in routine treatment for two weeks. Cultures were then taken from the point and washer at intervals of two weeks while the following solutions were being used: sterile water, saturated solution of boric acid, bichlorid of mercury (1 in 5000), carbolic acid (two and a half and five per cent.)

Cultures obtained from the point and washer in every instance, though several attempts were sometimes necessary before a growth was obtained while the syringe was still in use. The solutions of carbolic acid and bichlorid of mercury will in time destroy the bacteria, but are of little value in preventing the conveyance of sepsis while the syringe is in daily use, as sufficient time does not elapse for the destruction of the bacteria. The author describes a syringe constructed so that the point which

comes in contact with the ear admits of sterilization and can be easily removed. Through this point there is no suction, which prevents the entrance of infectious material.

*Seymour Oppenheimer.*

#### **Faradization in Tinnitus Aurium.**

PRICE W. (*Journal of Electro-Therapeutics*, September, 1900. The author recommends the use of the faradic current in tinnitus aurium employed in the following manner. The negative cord from a good coil is attached to a large copper electrode; from the positive terminal, two cords are brought, each attached to an ordinary hand electrode. Both feet are placed against the negative electrode. Each hand grasps one of the positive electrodes. The coil is now set working, until the strength of the current is as much as can be endured with comfort. The knuckles of one hand are now applied to the effected ear. The amount of current passing through the ear can be regulated to a nicety as follows: Slightly open the hand against the ear and the current is at once proportionately decreased. Shut that hand while opening the other and the current through the ear is at once increased. This treatment has in the author's practice proven of benefit.

*Seymour Oppenheimer.*

#### **Report of a case of Spontaneous Cure of an Acute Mastoiditis.**

MCGOVERN H. S. (*The Laryngoscope*, October, 1900.) The report of a case of acute mastoiditis which had opened through the cortex of the mastoid cells, followed by the exfoliation of a mass of necrotic tissue and spontaneous healing.

*Seymour Oppenheimer.*

#### **Treatment of Catarrhal Adhesive Processes in the Middle Ear by Means of Intratubal Pilocarpin Injections.**

FISCHENICH, F., Wiesbaden. (*Berlin Klinisch Wochenschrift*, November 12, 1900.) The author recommends in these cases the injection into the tympanic cavity of a two per cent solution of pilocarpin. This is done by means of a flexible tubal canula passing through the catheter.

When auscultation shows the tube and catheter to be in position, 6-8 drops of the pilocarpin solution are put into the tube and forced into the tympanic cavity with a balloon. The dose is to be increased up to 10-12-16 drops. Aside from some slight pain and dizziness no

untoward symptoms were observed. 30 to 35 injections were often necessary but how often they are to be made the author does not state. With this treatment a considerable restoration of hearing and relief to tinnitus has been obtained. Catarrhal swelling of the Eustachian tube is also greatly relieved. The observations were based upon 120 cases. *S. E. Allen.*

**What is the Position to be Taken at this Time Concerning the Treatment of Chronic Purulent Otitis Media; and How do we Stand on the Cholesteatoma Question.**

LEUERT, DR. E., Königsberg. (*Muenchener Klin. Wochenschrift*, Nos. 39, 40, 41, September and October, 1900.) The above is a very complete and intelligent discussion of these subjects, extending through three numbers of the *Wochenschrift*. The author claims that the position of the perforation in chronic cases allows us to draw fairly accurate conclusions as to the situation of the trouble. Thirteen small schematic drawings of perforations differently situated serve to illustrate the contention. As to operative interference definite conclusions may be obtained from inspection. Perforations indicating disease of ossicles call for their removal; those indicating attic or antrum disease, for the radical operation; while perforations confined to the lower quadrants indicate disease limited to the tympanic cavity proper and do not justify operative interference. The fact that conservative treatment fails in some of these cases is no justification for operating. The best treatment for these cases is irrigation through the catheter. The subject of cholesteatoma is gone into very thoroughly. After a very careful consideration of the varieties and their etiology, the author adopts the generally accepted theory of Haberman. Cholesteatoma formation is favored when the inflammation is of a certain moderate grade. If it exceeds this, the chances of cholesteatoma formation are reduced; and if the inflammation becomes very slight the proliferation of epidermis is very slow and the enlargement of the mass takes place as gradually and slowly as is noticed in the cholesteatoma of pia mater. Marginal perforations in upper quadrants are most favorable for the formation of these epithelial growths or accumulations.

A reading of the original article is recommended, for

while not much new is to be found, the author has given us a very interesting and readable review of the subject and has certainly put the indications for operation on a more scientific basis.

*S. E. Allen.*

**A Case of Bezold's Mastoiditis Secondary to Facial Erysipelas; Operation; Recurrence of the Erysipelas within Twenty-four Hours; Cure.**

DUNN, RICHMOND. (*Archives of Otology*, Vol. XXIX, Nos. 2 and 3.) The patient after ten days suffering from general facial erysipelas, experienced severe pain in the left side of the head and three or four days later the left ear began to discharge. The severe head pains continued till seen by the author three weeks later. On examination: pulse 90, temperature 99.5 F. The left mastoid process and for two inches below it was swollen, edematous and extremely sensitive to pressure.

Operation revealed practically total destruction of the mastoid; the loss of the inner plate laying bare a large area of dura mater.

As there were no symptoms of sinus thrombosis, the sinus was not explored.

Erysipelas re-appeared next morning and temperature reached 102°F. The reddened area was painted three times with carbolic acid and covered with gauze soaked in alcohol. The following morning temperature was down to 99°F. and convalescence from that time onwards was uneventful.

*Campbell.*

**Re-Examination of the Hearing of Deaf-Mutes Originally Tested in 1893.**

BEZOLD, MUNICH. (*Archives of Otology*, Vol. XXIX, Nos. 2 and 3.) The result of re-examination with Edelman's new instruments showed the number of totally deaf is less than before. Two deaf-mutes, however, lost considerable hearing in the interval, and it would seem as if we were justified in assuming that some cases always show slow advance of the destructive processes in the cochlea.

The other twenty deaf-mutes showed about the same hearing at both tests, or a moderate increase averaging six semitones.

Four cases characterized by excessively defective comprehension for speech despite extensive perception for the

tone scale, prove accessibility to instruction by speech through the ear. We know that wherever a satisfactory remnant of hearing exists, it can be utilized for the comprehension of the voice by well-conducted instruction, no matter whether the pathologic alterations producing the defects of hearing lie in the cochlea or at any locality beyond.

*Campbell.*

### Three Cases of Diabetic Mastoiditis.

KIEL, FRIEDRICH. (*Archives of Otolaryngology*, Vol. XXIX, Nos. 2 and 3.) Case I. A man aged 50, for years has suffered from diabetes; the amount of sugar never exceeding 1 to 2 per cent and easily suppressed by dieting. He was seized with left-sided ear and head pain. The mastoid apex was tender on pressure, the external auditory canal swollen, the mt. dark-red, bullous and bulging in its upper posterior half. Upon paracentesis a thin sanguinolent fluid escaped. After a second paracentesis profuse suppuration persisted and about one month after the inception of ear symptoms he complained of constant dull headache and sleepless nights. The upper wall of the external auditory meatus was sinking, without external changes of the mastoid and without sensibility upon pressure.

Upon operation under chloroform the mastoid was found of dirty gray color, brittle and partially sequestered. The antrum was large and filled with pus. The tissues were removed as far back as the sinus and downward to the mastoid tip. On the day following the operation the amount of sugar increased to 1.85 per cent but disappeared after two days. Hearing faculty for conversation was preserved.

Case II. A woman, aged 46, for two weeks had suffered for two weeks from acute suppuration of the left ear and for a few days from intense pain over the mastoid.

The external meatus is filled with pus, the posterior wall bulges, the mastoid process sensitive to pressure and its soft parts slightly infiltrated.

Urine contains 5.85 per cent of sugar.

On the following day the swelling over the mastoid and of the upper and posterior wall of the external meatus had so much increased that operation was undertaken. Anesthesia was begun with chloroform and continued

with ether. On removing the cortex slightly fetid pus came from a large bone cavity communicating with the spacious antrum. The radical operation was done. Next day urine contained 2.42 per cent of sugar. There was vomiting, anorexia, thirst. Evening temperature 37.2°C. The next night breathing became deep and labored with the picture of beginning diabetic coma. Somnolence increased more and more and death supervened.

Case III. A man, aged 42, a hard drinker who for two years had left middle ear suppuration. Sudden pain and swelling behind the ear brought him to the hospital.

Urine contained albumin and 5 per cent sugar. He had arterio-sclerosis with small irregular and unequal pulse.

There was deep-seated fluctuation which extended from the temporal line down along the posterior edge of the sterno-cleido-mastoid muscle. The abscess was opened under local anesthesia and the probe detected bare bone at the mastoid apex. The quantity of sugar was reduced to  $\frac{1}{2}$ -1 $\frac{1}{4}$  per cent, the urine still contained albumin and profuse diarrhea appeared.

In diabetic mastoiditis the subjective and objective symptoms are out of proportion to the extreme extent of the disease.

The danger from operating consists in the subsequent appearance of sepsis and coma.

Coma is not due to operation or to shock but to the narcosis.

Naunyn's suggestion of the administration of sodium bicarbonate as a prophylactic in operations on diabetics, in addition to a regulated diet before and after the narcosis in order to avoid the intoxication with acids and the danger of the appearance of coma, is to be commended.

*Campbell.*

#### **Sharply Circumscribed Sound Defects in the Hearing-Fields of Certain Deaf-Mutes.**

SCHWENDT, Basel. (*Archives of Otology*, Vol. XXIX, Nos. 2 and 3.) CASE I. A boy, aged 7, who, through an attack of meningitis at the age of seven months, became blind in the right eye and absolutely deaf in his left ear. The right ear can well distinguish all vowels. The lower limit of his hearing lies at small c, the upper at h<sup>6</sup>. The most peculiar feature in his case is a sharply defined deaf-

ness for the note  $f^5$ , whereas  $c^5$  and  $g^5$  are clearly heard.

CASE II. A boy, aged 9, became deaf in his third year in consequence of influenza. The lower limit of his hearing lies in both ears at center C, the upper limit right at  $f^1$ , in the left at  $a^1$ . He cannot distinguish vowels, but he can hear them if they are shouted. The only consonant which he can recognize is R.

His duration of perception of the note c is greatly decreased.

CASE III. A girl, aged 21, completely deaf in her right ear in consequence of an attack of meningitis. In the left the upper limit lies immediately above  $g^2$ . The lower limit  $D_2$ . She can hear all consonants with the exception of S. Moderately loud conversation she can hear but when speech is too loud she is annoyed by it and cannot understand it at all well.

*Campbell.*

**Two Cases of Otitic Lateral-Sinus Disease; Operations, with Ligation of the Jugular.**

JOACHIM, New Orleans. (*Archives of Otolaryngology*, Vol. XXIX, No. 4.) CASE I. A man, aged 24, with bilateral intermittent otorrhea since childhood. Pain suddenly developed in the head near the right ear and he had a chill, followed by a rise of temperature, anorexia and malaise. When admitted to the hospital, temperature  $102^{\circ}\text{F}$ , pulse 135, sordes on teeth. The right pupil is dilated and slowly responds to light. Rigidity of the neck. The mastoid region is tender, red and swollen. A fetid discharge comes from the right ear and swelling and tenderness is present along the course of the internal jugular vein. Mt. is perforated in the upper and posterior segment.

On opening the sclerotic mastoid the antrum was found filled with fetid granulations. Opening the bone backward a large perisinus pus accumulation was freed and the lateral sinus laid bare. Inserting a trochar into the lateral sinus showed fluid fetid pus. The internal jugular vein was now ligated below the omo-hyoid muscle its contents found purulent and from this point upward for about 3 inches the vein was removed. The distal end of the lateral sinus was closed by a cord-like mass of fibrin. The patient reacted well from the shock of the operation but pyemic symptoms persisted and death took place twelve days after the operation. On post-mortem exam-



ination small metastatic abscesses in great number were found in the right lung. Brain substance congested; right lateral sinus thrombosed; a few drops of pus between dura and bone under the sigmoid sinus; a large quantity of pus at the jugular foramen and from there, accumulations in smooth-walled pockets extended to behind the esophagus, under the deep muscles of the neck, along the sheath and within the jugular vein, and into the vertebral canal.

CASE II. A man, aged 18, who, about 17 months earlier, first complained of pain in the right ear after diving. This was followed by a bloody discharge but recovery took place in a few weeks. In the following year he had a similar attack. Ten days prior to his admission to the hospital he was accidentally hit by an iron pipe on the right side of the back of the head. Half an hour after the injury pain began which gradually increased in severity. Fever, chills, profuse perspiration, diplopia followed one another in quick succession. The head became bent to the right side. On admission, temperature 102°F, pulse 120 and weak. The space along the course of the internal jugular, swollen, tender and resistant to touch.

Mt. in its upper portion appeared like a flat smooth granuloma, the anterior half bulged and was red. The mastoid region swollen and tender on pressure.

The radical operation was done; adjacent the lateral sinus was found a fetid, pulsating blackish-looking mass. The lateral sigmoid sinus were opened and a solid coagulum removed. The internal jugular vein was fetid and its upper part and together with the superimposed glands removed. Complete right facial and bilateral abducens paralysis were noted after the operation. On removing the dressings on the fifth day after the operation, the upper wound had a fetid odor with a limited area of blue pus on its surface. The lower wound was reopened and thoroughly cleansed. After this the recovery was uneventful, but facial paralysis persisted and he was left with just sufficient vision to move about unaided. *Campbell.*

**Contribution to the Knowledge of the Otogenous Diseases of the Brain, Meninges and Sinuses.**

LEHR, WITTE AND MUCK, assistants to Körner's clinic, Rostock. (*Archives of Otology*, Vol. XXIX, Nos. 2, 3 and

4.) The series of cases reported, thirty two in number, cannot be satisfactorily abstracted and should be read in the original reports. *Campbell.*

**Cholesteatoma of the Middle Ear, and Its Radical Operation; with the Report of a Case.**

ZIMMERMANN, Milwaukee. (*Archives of Otology*, Vol. XXIX, No. 4.) The author, after describing the causation and development of cholesteatoma, gives a very clear account of the correct treatment as outlined by Stacke. The author then reports the case of a man aged 26 who presented the following condition.

Left ear: Has large masses of granulations projecting from the external meatus. Fetid discharge and extensive necrosis of the tympanum.

Right ear: A large granulation springs from the posterior wall of the tympanic cavity. Attic was filled with fetid cholesteatomatous matter.

On both sides curetment and suitable after treatment was employed. Several months later the patient returned with the history that about one month prior to his reappearance an abscess had formed on the right side of his neck. A fistulous scar, one inch in length, commences  $1\frac{1}{2}$  inch below the tip of mastoid and runs down along the course of the sterno-cleido-mastoid muscle (Bezold's mastoiditis). Total facial paralysis fetid discharge from right ear; posterior meatal wall bulges forward. Some cholesteatomatous masses were evacuated with a probe. The radical operation was undertaken and all cavities of the middle ear and posterior cranial fossa were widely opened and thoroughly scraped. A perforation of the medial aspect of the tip of the mastoid process lead into a fistula which ran downward to the fistula on the neck. The tip was chiseled away and fistula scraped. The dura was largely exposed and found thickened. No granulations ever developed on it.

The patient recovered well and hearing is better than before operation. The facial paralysis was cured and with six months after treatment epidermization was complete.

*Campbell.*

**A New Case of Mastoiditis in a Diabetic Patient.**

MUCK, Rostock. (*Archives of Otology*, Vol. XXIX, No. 4.) An official, aged 47, has suffered from diabetes for

two years. He had a ravenous, unrestricted appetite and to quench thirst drank great quantities of beer. Having contracted "a cold," gastric catarrh, diarrhea and icterus were quickly followed by epistaxis and intense pain in the right ear. On examination the mt. was reddened and greatly bulging, the glands along the sterno-cleido-mastoid muscle enlarged and the mastoid era slightly tender. Paracentesis was done and the auditory canal packed with gauze. Urine contained 2 per cent. sugar. For two weeks there was a gradual improvement in his condition then inflammation with pain set in anew. Neuralgic pains radiate from ear toward the top of the head. Sagging of the posterior meatal wall. yellowish-brown pus in meatus with a pulsating reflex.

On operation the bone was found yellowish-red, the cortex sclerosed. Pus and blood welled up through a fistula which led to the antrum filled with purple granulations.

Eight weeks after operation the wound was perfectly healed. The mt. was thickened and lustreless but whispered words could be heard at a distance of 6 M.

*Campbell.*

**Upon the Color of Living Rachitic Bone as Found during Mastoid Operations in Rachitic Children.**

MUCK, ROSTOCK. (*Archives of Otology*, Vol. XXIX, No. 4.) The macroscopic condition of a rachitic mastoid during life, differs from that on the post-mortem table whereby decreased blood supply and other post-mortem changes it has lost the bright rose color which it has during life.

This color is solely brought about by increase of the vascular and medullary formations. A remarkable feature is that this bone does not bleed as one is accustomed to see it in infectious inflammations of bone. The author then verifies these statements by describing the conditions found in two infants on whom he performed mastoid operations.

*Campbell.*

**A Personal Experience of an Acute Attack of Autophony.**

KNAPP, New York. (*Archives of Otology*, Vol. XXIX, No. 4.) The doctor being reduced in flesh by an acute attack of summer diarrhea noted that the symptom of autophony was preceded by hyperemia, swelling and

stiffness of the walls of the pharynx. At first the autophony was only in one ear, then in both; at first in short attacks controllable by negative valsalva or stooping, later lasting a few hours together, not relieved by negative valsalva and by stooping, only so long as the head was thrown down. While lying down it always disappeared. At no time was there any otitis connected with it. The mechanical cause was a patency of the Eustachian tubes, their easy closure being impeded by the rigidity of their walls, especially the membranous and during the inspiratory act air rushing directly through the eustachian tubes into the tympanic cavities. The whole complaint was recovered from as his general health improved. *Campbell.*

#### **The Significance of Earache in Children.**

HALSTEAD, T. H., M. D., Syracuse. New York. After reviewing the subject the author's conclusions are given as follows: Earache is usually due to acute inflammation of the middle ear, suppurative or catarrhal. Purulent otitis media is nearly always present in the acute infectious diseases of the gastro-intestinal and respiratory tracts in young children, and many cases of death from these affections result from unrecognized and untreated abscesses of the middle ear. Repeated earaches in children are usually a sign of an acute attack of chronic otitis, the cause being adenoid growths, and in adult life, many a case of so-called catarrhal or progressive deafness is often only the final stage of an otitis media which began in childhood, at which time it was due to adenoids, and was practically curable. *Richards.*

#### **Chronic Ear Vertigo (Meniere's Disease); Its Mechanism and Surgical Treatment.**

BURNETT, CHARLES H., M. D., Philadelphia. (*Philadelphia Medical Journal*, Sept. 22, 1900.) A review of the anatomy and physiology of the internal ear is first given. This disease occurs in the great majority of cases in chronic sclerotic otitis media, and as a rule only one is the cause of ear-vertigo, and this one is always profoundly deaf, and may be the seat of distressing tinnitus. The patient is seized with a sudden unaccountable vertigo, with increased tinnitus in the affected ear. The attack lasts from a few minutes to half an hour; nausea may be pres-

ent in the early attacks, but is not as a rule until later in the disease. As the seizure becomes more frequent, more severe and longer in duration, nausea and vomiting may be very intense, and result in a kind of collapse, with pallid face and clammy surface, but *without loss of consciousness*. "The fact that the patient does not lose consciousness from ear-vertigo serves as the great differential guide in diagnosis between ear-vertigo and apoplexy and epilepsy, with both of which it is often confounded at first. The apparent motion in ear-vertigo is generally toward the affected ear, in which direction the patient tends to fall. When both ears are the cause of ear-vertigo, the patient is entirely unable to walk, and sits down whenever he is attacked, even in the street. In such cases the patient's actions are often mistakenly attributed to alcoholic intoxication. These phenomena have been termed Ménière's symptoms, or disease."

The first attacks are usually misinterpreted, and it is not until later that an examination reveals the fact that the patient is a victim of chronic ear-vertigo, upon which the tympanic membrane will be found opaque, thickened and retracted, the malleus drawn upward and backward toward the aditus and the incudo-stapedial joint is usually visible through the upper posterior quadrant.

The author regards the retraction of the membrane and ossicles as the mechanical cause of the ear-vertigo. "The retracted chain of bonelets, by pressing the stapes inward into the oval window and holding it there in a condition of undue retraction upon the vestibule and its fluid, compromises the latter space and compresses the labyrinthine fluid upon the ampullar nerves in the semicircular canals, and ear-vertigo is evoked." Normally, this pressure is compensated by the yielding toward the drum cavity of the membrane of the round window.

The cause being mechanical in the author's view, he has devised an operation for its correction, consisting of the surgical removal of the incus for the cases of ear-vertigo originating in chronic catarrhal otitis. "The removal of the incus breaks the retractive force of the tensor tympani and malleus exerted through the incus upon the stapes, and the latter bonelet is liberated." Under ether, he makes an incision close behind the short process of the

malleus, following the periphery of the drum backward and downward until below a line drawn horizontally through the umbo. (The flap thus made is pushed inward toward the promontory by means of a probe armed with a small dossil of sterilized cotton.) The incus being now visible, is gently disarticulated from the stapes by drawing the former outward and downward by the use of an incus-hook knife passed behind its long limb, which is next grasped by special forceps and drawn cautiously downward and outward into the auditory canal and removed from the ear. The operation is now finished. The meatus is stopped with sterilized cotton, and the ear let alone from 24 to 48 hours. As a rule no reaction follows.

In those cases of ear-vertigo dependent upon chronic purulent processes, the incus is detached and removed first, and the remnant of the diseased membrane and malleus then completely excised; "hemorrhage in these cases is always relatively great." After the operation the ear requires syringing with a 1 to 5000 bichlorid solution and should not be stopped with cotton, but allowed to discharge. Subsequent treatment is that of chronic otitis media. The author has performed this operation in its two forms in 27 cases of ear-vertigo, and in no instance has it failed to give relief.

*Richards.*

**Practical Points in the Diagnosis and Treatment of of Otitic Pyemia.**

GRANT, DUNDAS, F.R.C.S. (*Journal of Laryngology, Rhinology and Otology*, October, 1900.) The diagnosis of otitic pyemia depends on the presence of the signs of pyemia in general, associated with acute or chronic suppurative disease in the middle ear or the bone surrounding it. When, therefore, in the course of acute or chronic suppurative inflammation of the middle ear, the patient is attacked with rigors and the temperature undergoes oscillation between elevation and depression, we may safely assume that we have to deal with otitic pyemia in one of its forms, more especially if metastases in the joints, lungs, subcutaneous tissue, or muscles or other organs and enlargement of the spleen supervene. Less frequently a continuous high temperature, persisting in spite of free exit for discharge, and accompanied by rapid and intense lowering of the vital power, indicates to us that

a more purely septicemic process is in action. The casual nature of the association with the ear disease, in presence of the severe constitutional disturbance, may be overlooked by the physician, especially if he is not accustomed to examine the ear.

The pyrexia and constitutional disturbance may be attributed to other diseases, of which the chief are *typhoid fever*, *malaria*, *acute rheumatism*, *ulcerative endocarditis*, *acute tuberculosis*, and *meningitis*. The following are the chief points in the diagnosis of otitic pyemia from the diseases mentioned:

*Typhoid fever* sometimes commences with rigors, but as a rule this is not the case. The temperature rises by means of higher, somewhat remitting steps for three or four days, never reaching 104° on the first day, and never descending to normal on any evening during the first week. As a rule, also, its onset is not sudden, although occasionally it is so. If the blood is examined, it may be found to answer to Widal's reaction. The roseola may settle the diagnosis at the end of a week. Optic neuritis or choked disc suggests otitic pyemia rather than typhoid fever.

In *malaria* the rigors are more regular in their periodicity, and the results of quinin are generally diagnostic, while if circumstances favor the examination of the blood, the characteristic plasmodium may be discovered. In *pyemia*, on the other hand, the examination of the blood, though usually negative, sometimes reveals the presence of streptococci in cultures.

*Acute rheumatism* is seldom accompanied by rigors, the temperature is more steadily high, and the number of joints affected in succession is larger.

*Acute ulcerative endocarditis*, which might be termed *endocarditic pyemia*, resembles the otitic in its many aspects. The metastases affect chiefly the lungs, kidneys, spleen, liver, skin, and brain, the emboli in the latter organ affecting chiefly the left hemisphere, and so producing right-sided paralyses, which rapidly pass away. The absence of ear disease is, of course, an important factor in the diagnosis.

*Acute tuberculosis* is sometimes characterized by the occurrence of rigors, but there is generally evidence of

pulmonary involvement, and tubercle bacilli may be detected in the sputum. The attack has usually been preceded by gradual loss of health and wasting of tissue.

When the acute or chronic suppurative inflammation of the middle ear is recognized, the question may arise as to whether the sudden febrile disturbance is due to the aural disease or to some other morbid state coincidentally associated with it. There is no reason why the sufferer from chronic otitis should not be affected with some other disease, such as typhoid fever, pulmonary tuberculosis, or acute alcoholism. The possibility of these occurrences should not, however, influence our minds too much, or deter us, when in doubt, from making the exploration on which ultimate diagnosis and the safety of the patient's life may entirely depend.

Assuming that the disturbance of general health is attributable to the acute or chronic disease of the ear, we have to consider the diagnosis of otitic pyemia from the other possible dangerous sequelæ, and its recognition when combined with one or more of them. Of these the chief are *extradural abscess*, *purulent meningitis*, *cerebral* and *cerebellar abscess*.

*Extradural abscess* has usually a small orifice of outlet into the cavities of the middle ear, through either the roof or posterior wall, or through the lateral wall of the skull, or in both directions. When the escape is not free the patient suffers from headache, a tendency to coma, with febrile disturbance, all of which symptoms may undergo a remarkable diminution simultaneous with a flow of pus from the ear in much larger quantity than could possibly take place from the cavities in the interior of the temporal bone. When there is a perforation through the lateral wall of the skull, there is an accumulation of pus beneath the pericranium and a bulging of the scalp either above or somewhat behind the mastoid process. Pressure upon this may cause a copious flow of pus from the depths of the middle ear.

*Meningitis* is usually characterized by the early onset of delirium, violent headache, continuousness of high temperature, a rapidity of pulse, vomiting and obstinate constipation, with a tendency to strabismus and retraction of the head. In pyemia, on the other hand, the temperature



is, as a rule, oscillatory, although in the pure septicemic form it may be continuous. There is frequently also diarrhea. The symptoms described may arise either from serous or from purulent meningitis, and our chief means of diagnosis is lumbar puncture of the theca of the spinal cord.

In *abscess of the cerebrum or cerebellum* there is at the outset a rise of temperature, and possibly a rigor; but this subsides and the abscess remains latent till, after an interval, there supervene headache, slowness of cerebral action, with lowering of the rate of pulse and respiration, as well as of the temperature. There is often vomiting, the bowels are obstinate and confined, and there is great emaciation. In *temporo-sphenoidal abscess* there may be diverging strabismus from pressure on the third nerve, and weakness of the arm and leg on the opposite side of the body. In *cerebellar abscess* the weakness is in the limbs of the affected side. In complicated cases, therefore, the diagnosis of otitic pyemia from either of these conditions is fairly obvious.

When otitic pyemia, with or without thrombosis of the sinus, is present *in combination with cerebral abscess*, the temperature is that of the pyemia, but the pulse may be disproportionately slow. When otitic pyemia is *combined with meningitis*, the mental disturbance is much greater than when the pyemia exists alone, and the lumbar puncture will reveal the presence or absence of purulent meningitis. The data arrived at from the use of the ophthalmoscope are somewhat inconclusive as regards the presence of cerebral or cerebellar abscess. A dilatation of the retinal veins, with swelling of the disc, is strongly suggestive of thrombosed sinus, and when it is unilateral it indicates that the disease has extended to the cavernous sinus.

As have been said before, the crowning signs of otitic pyemia are the occurrence of metastatic suppuration in other parts of the body, though these may be so minute as as to give no physical signs.

Our diagnosis of otitic pyemia as such being thus established with considerable probability, we have to approach the diagnosis between the *thrombotic* and *non-thrombotic* forms.

When the condition arises as a result of the chronic suppuration of the middle ear of more than one year's standing, and especially if there is evidence of metastases in the lungs or pleura, it is practically certain that there is a thrombo-phlebitis of one or other of the sinuses. We are, however, helped by the search for local evidences of involvement of the venous channels first without, but afterward with, operative exploration. An abnormal degree of filling the external jugular vein would suggest that the internal jugular of the same side is obstructed; fullness above the orbit, with edema and distention of the contents of this cavity and dilatation of the retinal veins, would indicate plugging of the cavernous sinus. Tenderness, or the presence of an elongated swelling along the internal jugular vein, would indicate inflammation of this channel, or, at least, an inflammatory condition of the superjacent lymphatic glands. Occasionally the inflamed and suppurating vein may form a fluctuating swelling. Tenderness behind the mastoid region would suggest infiltration of the condylar or vertebral veins.

When, on the other hand, it is due to an acute suppuration, and the metastases affect rather the joints or the greater circulation, there is a probability that it has not been preceded by thrombo-phlebitis of the great sinuses, and it is of the non-thrombotic form.

The diagnosis of *sapremia* may still have to be made, because pus retained under pressure may give rise to the febrile and constitutional disturbance already described, with the exception of a metastatic abscess formation. It is, therefore, only after the free opening of the middle ear and the cavities connected with it that we may be able to judge as to whether the symptoms are due to this condition or to the infection of blood itself. In children the evacuation of a small quantity of pus from the middle ear, effected by paracentesis of the membrane, may suffice to remove all the febrile disturbance, and in the adult the same result sometimes follows the performance of the mastoid operation—the radical in chronic, the antral in acute cases—and we have then had to deal with *sapremia* or aseptic intoxication from retention of pus. Should not this evacuation lead to the disappearance of the febrile symptoms, we have to deal with pyemia; and

though in the acute cases we may postpone further exploration, treating the metastases as they arise, we must in the chronic expose and explore the lateral sinus. In any case, unless the mastoid operation evacuates the pus under pressure in some considerable quantity, we are not justified in abstaining from further operative exploration if the patient's symptoms are threatening. This is especially true when we are called upon to deal with a patient at a distance, though when the patient is in hospital under our continued supervision the rule admits sometimes of relaxation.

The confirmation of the diagnosis of thrombo-phlebitis cannot be carried further without *exploratory operations*, which frequently constitute the first step in the treatment of the disease.

The details of exposure of the lateral sinus vary in the hands of different operators, and must be ordered according to the nature of the case. When, during the performance of the mastoid operation, there is already an opening into the groove for the lateral sinus, this opening may be extended by means of the chisel and mallet, and the cutting or gouge forceps; but in the absence of such indications, and more especially when it is desired at the same time to explore the middle fossa of the skull, a trephine  $\frac{3}{4}$  inch in diameter may be placed with its centre pin 1 inch behind the centre of the osseous meatus and  $1\frac{1}{2}$  inch above its centre; the opening may be extended upward and downward by means of bone forceps. If one forefinger is placed on the sinus and another on the jugular vein, and no fluctuation can be conveyed from one to the other, there is absolute thrombosis somewhere between the two fingers. The condition of the contents of the sinus may then be decided by means of puncture, the part being first carefully sterilized with prechlorid or biniodid of mercury, and a hypodermic syringe, also carefully sterilized, being employed. The withdrawal of pure blood offers no positive assurance of any kind, as it does not exclude the possibility of there being a parietal thrombosis; the withdrawal of pus would indicate without doubt the blood in the sinus had coagulated, and that the thrombus was undergoing purulent disintegration; the absence of any fluid at all would indicate that the needle had entered a throm-

bus which, at the perforated part, at least, had not yet broken down. If the sinus presents its natural appearance and the needle withdraws pure blood, the absence of the fluctuation before described would indicate that there remained little doubt of the presence of a thrombus in the bulb of the jugular vein, which may have become infected through the floor of the tympanum or from the lodgement in it of septic emboli which had formed in the sigmoid sinus, and we have then to deal with thrombophlebitis of the bulb of the jugular vein.

#### TREATMENT OF OTITIC PYEMIA.

*Expectant treatment* need only be mentioned to be condemned.

*Non-surgical treatment* may take the form of the administration of diuretics and purgatives, while to keep up the patient's strength, especially in the pure septicemic cases with continuous intermittent high temperature, alcoholic stimulants, quinin, ammonia and nourishing diet may be required. To counteract the toxic effect of the streptococcus or its products, injections of antistreptococcic serum may be made; and indeed, in cases of continuous septicemia, unrelieved by complete evacuation of all sources of infection, this is practically our only resource.

*Surgical treatment* takes its simplest form in free incision of the membrana tympani, and when this results in the evacuation of unmistakable pus, it may, especially in children, be all that is required.

Then, polypi or masses of granulations or collections of broken down desquamated epithelium in the tympanic cavities must next be removed, but in the presence of pyemic symptoms it is not justifiable in the adult to stop short at their removal, and the petro-mastoid cavities must be opened without delay.

In acute cases the mastoid cells and antrum must be freely opened; all diseased bone and granulation tissue should be carefully but thoroughly scraped away, and it is most important that the peripheral cells should be freely exposed as far as the very apex of the mastoid process. Recrudescence of fever has often been found to be due to the persistence of a focus of pus in one of the

apical cells, which has been overlooked at the first operation. This may be all that is required to bring the case to a successful termination.

In addition to the operative treatment, the patient is kept at rest and is administered diuretics, quinin, and nourishing liquid food; antistreptococcic serum is injected if the temperature does not rapidly descend to about the normal, and metastatic abscesses are opened as they form.

In some acute cases persistence of the symptoms, in spite of this treatment, may be due to this formation of parietal thrombi in the sinus or the jugular bulb: exploration and treatment, as recommended for chronic cases, is then to be carried out, including ligature of the jugular vein, incision, evacuation, and obliteration of the sigmoid sinus.

In the performance of the mastoid operation in acute cases, great care must be taken to avoid wounding the sigmoid sinus. This accident is not so insignificant as writers have hitherto taught.

In *chronic* cases, if there is well-marked evidence of thrombo-phlebitis of the jugular vein in the neck, this may be exposed and ligatured, and possibly evacuated, before the radical operation is carried out. In the absence of such evidence we proceed at once to do the radical operation, and then expose the sigmoid sinus by a continuation backward of the breach of the bone, and explore it as before described. If it is thrombosed, and there is evidence of puriform disintegration high up in the sinus, it may be freely incised, and the purulent debris completely removed with a spoon. If absolutely firm, healthy occlusive clot is then reached, the cavity may be washed out with sublimate solution, dusted freely with iodoform alone or in combination with boracic acid, and lightly plugged with iodoform gauze. The lips of the cut in the sinus may be doubled in so as to assist in the obliteration of the cavity.

(The essayist describes a case exhibited before the Otological Society of the United Kingdom.)

At the same meeting Mr. Arthur Cheate showed a similar case of sinus thrombosis in which recovery followed an operation limited to the sinus without ligature of the jugular vein. Warnecke publishes in the *Archiv. für*

*Ohrenheilkunde*, March 15, 1900 (pp. 197, 198), two cases of sinus thrombosis, with connective-tissue obliteration of the sigmoid sinus, occurring in Professor Lucæ's clinic in Berlin. The clinical histories are almost identical with that of the case I have just described. The most striking results of this method of treatment are those obtained by Professor Macewen, and published in his work on the "Pyogenic Diseases of the Brain and Spinal Cord" (Glasgow, 1893, p. 331). In twenty-eight cases of infective sigmoid sinus thrombosis treated without ligature of the jugular vein, he had only eight deaths.

If firm occlusive healthy clot has not been reached, or if after the above operation repeated rigors occur, it is necessary to expose the sinus to the utmost extent in both directions, scraping away the clot until a free flow of blood take place, then obliterating the space by the introduction of iodoform gauze. Before doing this the internal jugular vein ought to be exposed and ligatured. If the vein has undergone thrombosis, the ligature should be placed as low down in the neck as possible; the upper part of the vein should be slit up and brought out through the upper angle of the wound, its contents being removed by means of cureting or very gentle syringing. If it is not thrombosed, the ligature should be placed as high as possible, the vein being left uncut; the sigmoid sinus should be then freely cleared out, the wound irrigated with perchlorid solution, dusted with iodoform, and lightly plugged with iodoform gauze, an antiseptic gauze being placed over all.

Dr. Nicoll published in the Glasgow Hospital Reports for 1889 a case in which he exposed the lateral sinus as far back as the torcular. It may also be exposed downward to the jugular bulb, and Chipault shows how the portion of bone dipping down into the hollow of the sinus may be removed.

Among other practical points, this case shows the necessity of removing the gauze tampon with as little delay as possible. Ballance says that it should not be left for more than twenty-four hours; it can, of course, be renewed if necessary.

In thrombosis of the cavernous sinus the best chance of recovery is afforded by free incision of the lateral sinus

with ligature of the jugular vein, in the hope that the clot may be dislodged and extruded through the opening in the lateral sinus.

Should the temperature be continuously high and the vital powers undergoing rapid exhaustion, antistreptococcic serum, or even normal blood serum, may be injected. The patient's strength must be kept up by means of quinin and alcoholic stimulants.

When complicated with cerebral or cerebellar abscess, the abscess should be opened through an aperture in the bone as far as possible from the sigmoid sinus.

When complicated with meningitis, lumbar puncture may be performed. If there are pus cells or cocci in the fluid, no further operation should be attempted. In the absence of these the meningitis is probably of the serous form, and likely to subside after operation on the sinus.

Metastatic abscesses must be opened as they arise.

#### On a Universal Notation of Acoumetry.

SCHIFFERS, F., Liège. (*The Journal of Laryngology, Rhinology, and Otology*, October, 1900.) For several years attempts have been made by physicians and physiologists to invent a simple and practical acoumetric notation. The endeavor to invent a method which shall put the measurement of hearing acuity on the same level as the measurement of visual acuity is a legitimate endeavor, but it must be admitted that the problem is much more complex, and its solution is extremely difficult. Apart from the incompleteness of our knowledge of the physiology of hearing, the difficulty of the problem is increased by the fact that sound vibrations reach the perceptive apparatus by two distinct routes, the aerial and the bony. Further the principal function of the ear is to perceive articulate language. We have, therefore, to deal not only with the special sense, but also with the faculty of appreciation and analysis, the comprehension of the complex sounds of the different words which succeed one another in a phrase. How can we possibly invent a simple and trustworthy notation of these? Daily experience with children demonstrates the necessity for recognizing this faculty of perception of articulate language. In early infancy, specially, there can be no doubt that the different functions of the nerve of hearing are not in constant rap-

port with one another. How, then, can we get an exact idea of the functional disturbance from any single method of measurement, even if founded on the use of a perfect acoumeter?

The study of this question has been complicated by the fact that the different methods in use have attempted to determine the position of the lesion of functional disturbance. This mode of regarding the question ought to be given up; any way, it has given rise to numerous errors. In many cases it cannot, of itself, establish a sure diagnosis.

*Conclusions.*—1. The watch and all kinds of acoumeters without graduation are useless for the desired notation—that is, for a “minimal fundamental notation.” Watches are not all alike in their sound; moreover, as the graduation of intensity of the sound depends on distance, it is not possible to use this method for measuring the hearing power “on contact.”

2. The tuning-fork is the best instrument for measurement of hearing power. The optical method constitutes a decided step forward, and may be further perfected. It is, we believe, the simplest and most exact existing method of making a minimal acoumetric notation. It is applicable to all cases.

3. The method of noting the time during which a given tuning-fork is heard has many supporters. The tuning-fork used must be named—that is to say, the number of vibrations per second. The result would be expressed thus: R. A.  $c_2$  256 v.  $\frac{9}{24}$ ; i. e., right ear, by air-conduction, hears a fork of 256 vibrations for nine seconds, whilst a normal ear hears it twenty-four seconds.

4. Weber's experiment maintains its value.

5. Rinne's experiment, if used at all, must be modified. The foot of the fork ought to be held in front of the otoscopic tube in order to get a proper comparison between aerial and bone conduction.

6. Examination by spoken words is indispensable, specially in the case of children. Here Wolf's experiments must be kept in mind. Vowels and consonants—omitting sibilants—spoken in a whisper, using only residual air, are to be employed. A method of giving a uniform tone to the voice is a desideratum; without it all vocal measurements lack precision. In noting results the



words or letters whispered, and the distance at which they are repeated, are to be recorded.

**Proposed Universal Notation of Acoumetry.**

HARTMANN, ARTHUR, Berlin. (*The Journal of Laryngology, Rhinology, and Otology*, October, 1900.) Tests of hearing-power have two objects: (1) To make a diagnosis possible of the kind of disease of the organ of hearing. (2) To determine the degree of hearing-power and the results of treatment.

For diagnosis it is essential to estimate the power of hearing by air-conduction and by bone-conduction.

As all combinations of sound-waves are the resultant of simple vibrations, the latter from the true basis on which an exact estimate of auditory acuity is to be formed for diagnostic purposes.

The only instrument we possess for conveying simple sonorous vibrations to the ear, through the air and by the bone, is the tuning-fork.

Therefore, for diagnostic purposes, hearing must be tested by tuning-forks, and the duration of perception by air and by bone must be determined.

The letters L (Luft), K (Knochen), A (Aer), O (Os), A (Air), B (Bone), may be used to indicate which route is referred to.

In noting the results of tuning-fork tests, we must state the number of vibrations of the fork, as well as the name of the fork, because physicists and musicians of different countries have not yet adopted a uniform standard. Further, note should be made of the time during which the given tuning fork is heard by the normal ear.

The simplest method will be to note the duration of hearing by the diseased ear, s (sinister), or d (dexter), in the form of a fraction, of which the denominator is the duration of hearing in the normal ear, the numerator that in the diseased ear. Thus: s.  $c^2$  512  $\frac{18}{48}$  L. (A), i. e. a tuning-fork (named  $c^2$ ) of 512 vibrations is heard by the healthy ear forty-eight seconds, by the diseased left (s) ear only eighteen seconds, by air conduction.

But as the chief use of the human ear is to understand speech, this power also must also be tested. The whispered voice is used, and in noting results the words used and the distance at which they are repeated are to be noted.

**Acoustic Exercises for Deaf-Mutes.**

URBANTSCHITSCH, V., Vienna. (*The Journal of Laryngology, Rhinology, and Otology*, October, 1900.) The paper deals first with the importance of acoustic exercises in all cases for developing the sense of hearing, then treats of methodical acoustic exercises for deaf-mutes. In a short historical review of the subject the excellent work of French authors is referred to, but the general neglect of the subject is lamented. In consequence of some remarkable results obtained by the author with methodical acoustic exercises in 1888, trials of the method were undertaken in Viennese schools for deaf-mutes. The author next describes the method of carrying out these exercises with very young children, then with children who are being taught to speak and to read.

Examination of the hearing-power of deaf-mutes shows that often considerable remnants of hearing-power (Hör-reste) are present, so that complete bilateral deafness is a rarity. On the other hand, comprehension of the sounds perceived is frequently absent; moreover, deaf-mutes show a remarkable lack of attention to sound-impressions. The object of methodical acoustic exercises is, therefore, (1) To awaken attention to acoustic impressions; (2) to build up "differential hearing;" (3) to increase acoustic excitability.

The author describes the application of the exercises to cases of very weak hearing-power and to the apparently totally deaf. Experience shows that even apparently totally deaf people ought to be tried. These exercises are not suitable for school children, on account of the great pains that must be taken and the time required.

The author then proceeds to answer several important questions.

1. What cases are suitable for methodical acoustic exercises? The exercises are always at first experimental, because the result cannot be foretold in any individual case. Success has been achieved even in deafness due to cerebro-spinal meningitis. The author is quite opposed to Bezold's view that all who cannot hear tuning-forks  $a^1$  to  $b^2$  should be passed over, for even in such cases he has had good results.

2. How long should the exercises be continued? The

more difficulty there is in arousing perception of sound, the more are special exercises required, whereas these may be limited or omitted whenever ordinary sounds are perceived or the deaf-mute can hear his own voice.

3. What are the results of acoustic exercises? The result of the exercises will vary with the nature and duration of the daily practice; with the amount of hearing power already present, and with its capacity for development; with the intellectual condition of the patient, and with his interest in the exercises. In some cases in which hearing-power is apparently absolutely wanting, a trace of hearing may be awakened which is capable of further development. As a general rule acoustic exercises raise the hearing power, thus a mere trace of hearing becomes a hearing of tones, this again is a hearing of vowels, words and sentences. The capacity for development of each individual case cannot, however, be estimated; it varies even in a right and a left ear which at the start were functionally equal.

4. What is the practical worth of acoustic exercises? These exercises have a favorable influence on speech, on its hardness and its modulation, and also on the possibility of learning a dialect. As his hearing-power improves social intercourse becomes easier for the deaf-mute, and at the same time the difficulty of earning his living diminishes.

#### **Acoustic Exercises in the Education of Deaf-Mutes.**

SCHWENDT, Bale. (*The Journal of Laryngology, Rhinology, and Otology*, October, 1900.) Remains of hearing-power must be taken advantage of when they are present in sufficient quantity. The patient should be able to hear vowels and a certain number of consonants. This corresponds to a hearing power for  $la^3$  to  $la^4$ .

2. Education of the ear must not interfere with lip-reading.

3. To judge of the results of the method of the semi-deaf ought to be separated—at least as an experiment—from the deaf-mutes.

#### **Surgical Treatment of Aural Sclerosis.**

SIEBENMANN, F., Bale. (*The Journal of Laryngology, Rhinology, and Otology*, October 1900.) The question whether aural sclerosis can be treated surgically

must, at the present time, be answered in the negative. Almost all aurists who have undertaken operative treatment are agreed that good results are obtained only in dealing with conditions resulting from old suppurations and from hypertrophic catarrh, and even in these the indications for operation and the results are quite uncertain.

The pathologico-anatomic conditions found in sclerosis are in themselves enough to warn us against surgical interference. In this connection it is to be noted that v. Troeltsch's sclerosis must be sharply distinguished from (1) all forms of closure of the tube, (2) results of previous middle-ear suppurations, (3) diseases of the nervous system implicating the acousticus. To the latter belongs presbycusis, which begins generally between the ages of forty and fifty, seldom earlier, and in which the middle ear remains free from any changes.

The juvenile form of progressive hardness of hearing generally begins in the second or third decennium of life (seldom later). This is the true (v. Troeltsch) sclerosis, and it is due to the formation of one or more centres of spongy bone in the dense bone of the labyrinthine capsule.

(a) The part most frequently and earliest effected is the wall of the labyrinth, especially the antero-superior part of the pelvis ovalis, which in the end leads to fixation of the stapes. This (fixation of stapes) is due partly to the narrowing of the recessus and fenestra ovalis by the spongy change in the bone, partly to an ossification of the ligamentum annulare. A mass of spongy bone extends, in almost all cases, forward and inward to the endosteum of the lumen of the cochlea. When not too far developed this disease presents Bezold's triad of symptoms.

(b) It is well known that isolated foci occur in all or in individual turns of the cochlea, producing the symptoms of the nerve deafness. This is probably more frequently due to chemical or physical alterations of the lymph than to pressure on the nervus cochlearis. Combinations of nerve deafness and stapes ankylosis are frequent, especially in the latter stages (dysacusis of Bezold).

(c) The point from which these foci start and spread out is the intermediate zone between actual labyrinthine capsule and the bone derived from the periosteum.

(d) Surgical treatment of the labyrinthine capsule in

this disease would have to remove so much bone—even in the earliest stages at which diagnosis is possible—that a great part of the membranous labyrinth (at least in the cochlea) would be torn, opened and destroyed.

## II.—NOSE.

### **Nasal Empyema as an Etiologic Factor in the Establishment and Continuation of Post-Nasal Catarrh and Catarrhal Inflammation of the Middle Ear, with an Especial Consideration of the Enlargement of the Posterior End of the Middle Turbinate as a Predisposing Cause,**

COBB, Boston. (*Archives of Otolaryngology*, Vol. XXIX, Nos. 2 and 3.) After going quite fully into the subject of post-nasal catarrh the author draws the following conclusions:

1. That the whole chain of catarrhal symptoms of the nose, the naso-pharynx and of the ears is due to empyema of the nasal accessory sinuses.

2. That this empyema is the result of an infective inflammation of the accessory sinuses in which the drainage is insufficient.

3. That the malformation of the posterior end of the middle turbinate plays an important part in establishing the nasal empyema which causes post-nasal catarrh.

4. That chronic catarrhal inflammation of the middle ear may result from the catarrhal condition of the naso-pharynx, either by extension of the disease, by continuity of tissue, by the forcibly blowing of the irritating secretion into the middle-ear cavity, or by closure of the eustachian tube from involvement of the mucous membrane in or around its entrance.

5. That there is no evidence that chronic catarrhal inflammation of the middle ear is caused by obstruction to nasal respiration unless the obstruction is associated with Empyema of the accessory sinuses.

6. That those cases of chronic catarrhal inflammation of the middle ear which are caused or made worse by naso-pharyngitis cannot be cured until the nasal empyema which causes the naso-pharyngitis is first cured, and that mechanical treatment directed to the ears is only palliative and does not free the patient from the danger of an acute exacerbation of the disease.

7. That many cases of nasal empyema may heal spontaneously under favorable conditions, and the more recent the case the more probable it is that this will occur.

8. That the accessory sinuses have a tendency to free themselves of inflammation and that treatment should be directed to assist nature to this end.

9. That it is possible to cure practically every case of nasal empyema and therefore every case of naso-pharyngitis depending on it.

*Campbell.*

**Herpes in the Course of a Pseudomembranous Diphtheria of the Nasal Passages.**

VIOLLETTE. (*Gazette des Hopitaux*, No. 109, 1900.) A child, three years old, had scarlatina, followed by a persistent nasal discharge, which showed seven and a half months later diphtheria bacilli. The nasal passages at this time were filled with a false membrane. This condition was accompanied by a herpetic eruption limited to the region of one hand innervated by the radial nerve. The injection of twenty cubic centimeters of antitoxin was followed by prompt recovery. The author believes the skin affection to be due to the action of a virulent germ upon a system already debilitated by preceeding disease. The suggestion is made that cases of this sort may serve to throw light upon the origin of certain infections or epidemic forms of herpes.

*Goodale.*

**Primary Epithelioma of the Antrum of the Highmore.**

CURTIS, HOLBROOK. (*The Laryngoscope*, October 1900.) Case of a lady, aet 50, who complained of severe neuralgic pains for two weeks over the distribution of the fifth and seventh nerves on the left side of the face. There was pronounced pain on pressure over the antrum, but no evidence of pus in the ostium maxillare.

Transillumination showed a marked umbra of the orbit and an opaque shadow in the vicinity of the antrum of that side.

The writer trephined through the socket of the first molar and obtained a free bloody discharge intermixed with brown caseous material. Irrigation was then practiced through this opening.

Two weeks later the nose became occluded the cheek swollen and the region of the third molar alveolus became soft and broke down. Under anesthesia a large opening

was made involving the three posterior alveoli and the canine fossa. The cavity was thoroughly curetted amidst a severe hemorrhage.

Scrapings of the tissue submitted to microscopic examination showed the same to be a most malignant type of epithelial cancer.

After the operation the invasion of the surrounding tissues took place with great rapidity, pushing the nasal bones to the right of the face and invading the nasal cavities of both sides.

Deglutition was greatly interfered with. Six weeks after the operation the patient succumbed.

The author refers to the rarity of primary nasal epithelioma.  
*Seymour Oppenheimer.*

#### **The Use of Citric Acid for the Relief of Ozena In Atrophic Rhinitis.**

SOMERS LEWIS S. (*Therapeutic Gazette*, March 1900.)

The author concludes that:

1. The drug is of great value in preventing the fetid odor of atrophic rhinitis.

2. The successful action depends upon its direct application to the diseased tissues; for this reason the removal of all foreign material is absolutely necessary.

3. After its use the ozena usually remains absent from one to two days, and in exceptional cases longer, depending upon the extent and severity of the morbid process.

4. It exercises no direct action upon the morbid tissue in the direction of restoration of its normal functions.

5. Unless used at more or less regular intervals its action is but transient, and the ozena speedily becomes prominent again.

6. To a moderate extent it inhibits scab formation.

7. Finally, citric acid is an important addition to the therapy of fetid rhinitis by enabling the rhinologist to successfully combat the chief and often only complaint of the patient—ozena.

The method of application consisted of daily insufflations of equal parts of milk sugar and citric acid finely triturated.  
*Seymour Oppenheimer.*

#### **The Result of Septal Deformities Upon the Upper Respiratory Tract.**

JOHNSON, E. R. M.D., Wollaston, Mass. (*The New*

*England Medical Gazette*, September, 1900.) Most septal malformations are caused by traumatism, usually received in childhood, but not discovered until later in life. The symptoms resulting from the same are described in detail, special prominence being given to those reflex disturbances which occur secondarily. Spurs, ridges, or decided thickenings are to be removed with the saw or knife. For deflections, the Asch operation is preferred, and the details for its performance are given. *Richards.*

**Hypertrophy of the Pharyngeal Tonsil. Its Anatomy and Physiology.**

PIERCE, NORVAL H., Chicago. (*Journal of the A. M. A.*, Nov. 3, 1900.) The pharyngeal tonsil develops at an early age, probably coincident with the faucial tonsils, and its ultimate nature is as much unknown. It is composed of lymphoid tissue, the round cells of which are indistinguishable from embryologic connective tissue and lymph nodes. These are held together with the blood vessels and nerves, by a reticulum of connective tissue, which has a great deal to do with the involution of the organ after hypertrophy. In process of time the embryologic tissue contracts, the lymph nodes are squeezed, their blood supply diminished and atrophy, or shrinkage, follows. The tonsil is covered with ciliated columnar epithelium as a rule, sometimes with squamous or cuboidal. Adenoids are hypertrophies of this normal tissue, and are most often caused by a succession of attacks of acute inflammation. The infectious diseases, such as measles, scarlet fever, etc., play an active part in the causation of this condition. They have been divided into three varieties, scrofulous, tuberculous and syphilitic: this classification does not embrace all cases. It is probable that there is a somewhat close relationship between adenoid tissue and tuberculosis. *Richards.*

**The Physiognomy of Chronic Pulmonary Tuberculosis, a Characteristic Peculiarity in the Appearance of the Nose.**

SHIVLEY, HENRY L. (*Philadelphia Med. Jour.*, September 1, 1900,) The author has noticed in cases of incipient tuberculosis that there occurs a pinched nose of peculiar waxey pallor, against which the brownish yellow orifices of the sebaceous ducts stand out in marked relief. The appearance is most noticeable at the tip and



lower third of the nose, and in rare instances is also present on the chin. The appearance is not constant, but occurs sufficiently often to have some diagnostic value.

*Richards.*

#### **Modes of Infection of the Maxillary Sinus.**

CRYER, H. M., M. D., D. D. S., Philadelphia. (*Jour. of the A. M. A.*, Nov. 24, 1900.) This is another of Dr. Cryer's valuable anatomic papers, illustrated by many dissections of his own, and the reader is referred to the original article itself, since it is impossible to properly abstract it without a reproduction of the pictures.

*Richards.*

#### **The Importance of Preliminary Treatment for Intra-Nasal Operations.**

SEILER, CARL, M D., Scranton, Pa. (*Medical Record*, October 27, 1900.) The writer makes a plea for the careful and thorough preliminary treatment of the nose with simple washes and stimulant applications, in order to render the nasal mucous membrane as nearly normal as possible before doing any operation upon it. The time required for the preliminary treatment will be well spent, the healing process being rendered more rapid and more satisfactory.

Professor Seiler states that many of the antiseptic pastiles which are sold under his name are not satisfactory, being frequently inefficient and in many instances even injurious, and he has been compelled to request the numerous manufacturers to withdraw his name from their preparation labels.

He regards what he calls the natural method of cleansing the nose one of the most efficient. "It consists of placing two ounces of the blood-warm cleansing solution in a small tumbler or cup, placing the end of the nose within the rim of the tilted vessel until the liquid enters the nostrils, then closing the mouth, and by a moderate inspiratory effort drawing the solution into the nose and naso-pharynx, thus bringing it in contact with all parts of the nasal mucous membrane. The vessel should then be quickly removed from the nose and the liquid within the nasal cavities be blown out through both nostrils at once, and the process repeated until the liquid in the vessel is exhausted."

*Richards.*

**Pseudo-Hemoptysis Arising in the Naso-Pharynx.**

BOTEY, RICHARDO, Barcelona. (*The Journal of Laryngology, Rhinology, and Otology*, November, 1900.) In six years the author has seen a score of cases of this kind, and was surprised that our special literature took so little notice of the subject.

He excluded all cases in which hemorrhage in the cavum was due to ulcer, malignant tumor, or traumatism. According to the literature, hemorrhages from the upper respiratory tract, which simulated hemoptysis, always arose from the larynx or a varix of the lingual tonsil. The author on the other hand, maintained that in almost all cases the cause of these false hemoptyses was to be sought in the naso-pharynx. The larynx and lingual tonsil were seldom at fault.

Dr. Botey cited six of his cases in support of his position. The patient always coughed but little, but in spite was frequently bloodstained; examination of nose, pharynx, larynx, root of tongue, and chest gave negative results.

If one examined the patient during an attack one saw the blood trickle down the posterior pharyngeal wall from behind the soft palate.

A swab introduced into the naso-pharynx would often induce an attack, and in any case would be stained with blood.

The author pointed out that from its position and structure the mucosa of the naso-pharynx was eminently liable to small hemorrhages. A slight superficial erosion was sufficient to produce hemorrhage from the almost unprotected superficial vessels. Such a hemorrhage would be stopped by the formation of a small clot; but this clot, being dried by the respiratory current, was apt to fall off, and so recurrent hemorrhages were produced.

Dr. Botey had frequently seen these small black clots on Luschka's tonsil, but more frequently between that and Rosenmüller's fossae. By touching one with the point of a probe he had produced hemorrhage, and so convinced himself of the naso-pharyngeal origin of pseudo-hemoptysis.

**A New Method of Treating Nasal and Naso-Pharyngeal Affections by the Application of Hot Air.**

LERMOYEZ, M., DR., and MAHN, G., DR., Paris. (*The*

*Journal of Laryngology, Rhinology, and Otology*, November, 1900.) Hot air had been used in the treatment of diseases of the upper respiratory passages only in the form of inhalations in which the air was moist and scarcely raised in temperature above that of the surrounding atmosphere. The authors applied currents of superheated dry air (80° to 100° C.) to limited areas of the mucous membrane, a method similar to that employed by Holländer and Jayle in dermatology and gynecology.

The air was obtained from steel cylinders, in which it was stored under a pressure of 120 atmospheres, was heated in a metal serpentine tube, and led to its destination in a protected flexible metal tube. To the latter were adjusted various cannulæ of different sizes and shapes, suitable for applying the air to the inferior turbinals, to the orifices of the Eustachian tubes, or to the ears. At the base of each cannula was an arrangement for regulating temperature and pressure.

The air was applied under guidance of the eye, with speculum and frontal mirror. A sitting lasted two minutes, and was repeated two or three times a week. As a rule from eight to twelve sittings were necessary to obtain good results. The treatment was absolutely painless. On applying the hot current there was at first intense retraction of the mucous membrane, quickly followed by a free aqueous secretion (defensive) which ceased after a few seconds. The good effect was manifest at once. At first only temporary, it tended to become permanent.

This treatment had been most beneficial in chronic congestive coryza with intermittent nasal obstruction. The results were remarkable and lasting if there was no angiomas degeneration of the pituitary membrane. Sneezing and other nervous symptoms of spasmodic coryza soon ceased. The discharge of nasal hydropnea dried up, and the mucous membrane returned to a normal (objective) condition. The only effect on hay fever was that the intensity of the crisis was diminished.

Lastly, good effects were obtained in ear troubles (deafness, tinnitus) accompanying nasal and naso-pharyngeal catarrh. Otalgia yielded to the treatment almost immediately.

This treatment was not a panacea for all nasal affections.

The authors had found it useless in ozena, purulent catarrh, nasal lupus, true hypertrophic rhinitis, and all affections of nose and naso-pharynx requiring surgical treatment.

**On the Importance of Auto-intoxication in Periodic and Aperiodic Coryza. Therapeutic Deductions. Eleven Cases.**

MONIER, Paris. (*The Journal of Laryngology, Rhinology, and Otology*, November, 1900.) The author had had the opportunity of watching carefully for several years a case of spasmodic rhino-bronchitis with paroxysms in May. He had obtained a cure in a few weeks by simple dieting.

The other ten cases, which were cured or much improved by the same treatment, confirmed the importance of auto-intoxication (gastro-intestinal) in both forms of spasmodic coryza.

The elimination of toxins by the pituitary membrane and by the glands of the respiratory tract explained:

1. The crisis of aperiodic coryza.

2. The extreme susceptibility of the nasal and bronchial mucosa to external irritants in pure periodic coryza.

Careful dieting ought therefore to be the foundation of all treatment, and should be combined with certain medicines as adjuvants) strychnin and benzo-naphthol).

Surgical treatment of the inferior turbinals, of malformation of the septum nasi, or of hypertrophied tissue in the naso-pharynx, was not to be neglected, specially in hay fever.

**Treatment of Deflections of the Septum.**

MOURE, E. J. (*The Journal of Laryngology, Rhinology, and Otology*, November, 1900.) Of all operations for deflections of the septum, that described by Asch seemed to be the most successful. It consisted in making a cruciform incision through the most prominent part of the deflection. Thus, four plates were formed, which were pushed through to the opposite side of the nose by means of a dilator. The author thought that this operation was not applicable to all cases, and he often had great difficulty in keeping Asch's tube in position. Dr. Moure's operation was quite different from Asch's. When there was a spur or thickening of the fibro-cartilage at the seat of the deflection—which was frequently the case—he first removed the ridge and shaved the septum *till nothing but the*

*deflection was left.* Allowing time for this to heal completely—i. e., generally about one month—he proceeded as follows:

“Both sides of the septum are cocaineized. An incision is made along the line of insertion of the septum, parallel to the floor of the nose, extending from just behind the vestibular portion of the septum to the vomer. A second incision is carried along the bridge of the nose, and is about as long as the first. A triangular plate is thus obtained, adherent in front at the vestibule, and behind at its insertion into perpendicular plate and vomer. This plate, as one would imagine, is very flexible. A special dilator—consisting of two parallel blades, the outer of which is rigid and fixed, while the inner is large and made of soft metal—is passed along the convex side of the septum, and the septum is pushed toward the opposite side by means of forceps, constructed *ad hoc*, passed into the dilator. By this means the flexible median plate of the dilator, and through it the septum, is forced to assume the desired position and shape. The dilator is left in position seven or eight days, till complete union of the parts has taken place in the new position. During the first forty-eight hours the nose should be bathed with sterile boracic acid solution, as there is apt to be a more or less intense inflammatory reaction. Thereafter the nose should be syringed occasionally to prevent the accumulation of crusts in the nasal cavities. As there is no suppuration, no local treatment is required. After eight days the apparatus is removed. Generally both the septum and the bridge of the nose are found quite straight.”

Dr. Moure had made use of this operation for more than two years, and had always had excellent results *in adults*.

For children it was not so suitable, on account of the pain produced, and also of the difficulty of keeping the dilator in position. In the author's opinion, however, this was no drawback to his operation, because no operation ought to be done on the septum till the skeleton of the nose had reached its full development.

**Pulmonary Emphysema Due to Experimental Nasal Obstruction.**

COUSTEAU, Paris. (*The Journal of Laryngology, Rhinology, and Otology*, November, 1900.) Young rabbits

were experimented on. One nostril was obliterated, and the rabbits were killed seven months later. The lungs presented very clear evidences of pulmonary emphysema. On the lungs were seen whitish raised plaques, presenting here and there little transparent vessicles of the size of a small pin's head. Microscopic examination was still more conclusive. The alveolar walls were thinned and even burst in places, thus forming lacune of greater or less size according to the number of alveoli that had yielded.

A similar result was obtained in twelve days by obliterating both nostrils in a rabbit.

The author wished to draw attention to the importance of maintaining the permeability of the nose, considering the rapidity with which stenosis (even incomplete) of the nose could give rise to pulmonary emphysema.

**Palpation of the Maxillary Antrum and Endo-Nasal Operation for Antral Empyema.** \*

KASPIRANT, DR., Moscow. (*The Journal of Laryngology, Rhinology, and Otology*, November, 1900.) Diagnosis by palpation was carried on by pressing a right angled probe in front and behind the processus uncinatus, so as to force the pus through the osseum maxillare in drops or even in jets.

*Endo-nasal Operation.*—The wall of the maxillary antrum was cut with a special knife, in front and behind the processus uncinatus: the processus uncinatus was cut away with a conchotome; after this followed resection of the lower part of the interior osseous wall of the antrum, along with the median portion of the internal turbinal. This was done with special cutting forceps.

Of the 34 cases operated upon, 31 were complete cures.

**The Surgery of the Sinus of the Face in Relation to the Surgery of the Orbit.**

LAURENS, G., Paris. (*The Journal of Laryngology, Rhinology, and Otology*. The author first discusses the anatomical, clinical and operative relations of the nasal accessory cavities to the orbits. He had operated on five cases of ethmoidal or fronto-ethmoidal sinusitis with orbital fistula and consequent phlegmon. They had all been frequently treated before. In all he obtained a radical cure by the following operation:

A long, curved incision, starting at the end of the eye-

brow, encircling the root of the nose, and ending a little to the inside of the internal commissure. Section down to the bone of all soft parts. Careful hemostasis of the peri-orbital arterio-venous circle; resection of the supra-orbital nerve. Then all the organs (muscles, ligaments, pulley of oblique muscle, etc.) attached to the internal wall were to be detached, and the eyeball gently passed outward. Care should be taken to avoid the anterior ethmoidal artery, which marked the upper limit of the field of operation with the gouge; operating higher up involved the risk of opening the cranial cavity. One had thus exposed to view the lamina papyracea (often carious) of the ethmoid. It was broken through with a curette, and thus free access to the whole of the anterior ethmoidal cells obtained. By this route the fronto-nasal duct could be exposed, and consequently the frontal sinus. If the latter was affected, and had been trephined several times already, the best method was to break down the whole anterior wall. In three cases M. Laurens had had to resect a large part of the superciliary arch and of the roof of the orbit to reach deep diverticula. The author always drained through the orbit if there was no pus in the nose.

The esthetic result was perfect in case of ethmoidal fistula, the cicatrix, largely hidden by the eyebrow, being scarcely visible. After resection of the roof of the orbit there was always a more or less pronounced depression. The author had never seen oculomotor troubles or strabismus after the operation.

**Painful Recurrent Catarrh of the Frontal Sinus, Due to Stenosis of the Fronto-Nasal Duct.**

LUC, Paris. (*The Journal of Laryngology, Rhinology, and Otology*, November, 1900.) In the two cases here reported the author had noticed the following group of symptoms: Pain, along with tenderness on pressure and sometimes swelling in one-half of the forehead, accompanied every coryza a frigore. It was always in the same side of the forehead. The pain occurred in crises, each crisis lasting several days and ceasing on the expulsion of a variable quantity of muco-pus.

In the first case the narrowness of the fronto-nasal duct—the cause of all the trouble—seemed to be congenital, and the affection, which was catarrhal at first, ultimately became a chronic empyema.

In the second case the fronto-nasal stricture seemed to date from an operation on the affected, sinus, in which operation no systemic dilatation of the duct had been carried out.

Both cases were cured by operation. After opening and cleansing the sinus, the fronto-nasal duct was enlarged by destruction of the nasal portion of the floor of the sinus, and of the anterior ethmoidal cells.

**On the Radical Operation for Chronic Multiple Sinusitis.**

TAPTAS, Constantinople. (*The Journal of Laryngology, Rhinology, and Otology*, November, 1900.) The author describes an operation for cases of combined frontal ethmoidal and sphenoidal empyema.

The ordinary incision used in Luc's operation was prolonged downward in the middle line of the nose to the lower third of the nasal bone. Then the frontal sinus was opened through its anterior wall, and the bone of the floor of the sinus and part of the nasal process of the superior maxillary bone were cut away and with fine forceps.

Thus an opening was made, extending high enough to permit thorough curettage of the frontal sinus, while its lower half was on the level of the ethmoid mass and sphenoid sinus. A curette or fine conchotome passed through this part of the opening next removed the whole ethmoid mass, and entered the sphenoid sinus at a depth of 5 to 6 centimeters from the external opening. The operation was finished as in Dr. Luc's method.

In cases of very large frontal sinuses, where a large piece of the anterior wall had to be removed in order to allow of thorough curettage, much post-operative deformity could be avoided by making, instead of one very large, two moderate sized openings, with a bridge of bone between them.

**Contribution to the Study of Nasal Tuberculosis.**

TEXIER, Nants, and BAR, Nice. (*The Journal of Laryngology, Rhinology, and Otology*, November, 1900.) Nasal tuberculosis was not a common affection, and primary nasal tuberculosis was rare.

The authors reported three cases, in one of which microscopic examination had confirmed the diagnosis. All three had not been published before, and could therefore be added to the small number (about seventy) of published cases.



The symptomatology of this affection was quite precise. Three forms might be described: (1) a pseudo-polypoid form, (2) an ulcerating form, and (3) a granular form (Chiari). It was not to be confused with lupus or tertiary syphilis of the nose. Prognosis depended on the general health and on the form of the local affection.

The only effective local treatment was curettage, followed by the application of 80 per cent. solution of lactic acid. Special attention must be given to the general health.

CASE I. was a primary, pseudo-polypoid form, with no antecedent tubercular lesions.

CASE II. was a secondary pseudo-polypoid or pseudo-edematous form, accompanied by military granulations in the posterior third of the nasal fosse and the pharynx.

CASE III. was an ulcerating form, limited to the vestibule of the nose. The ulceration was irregular and extremely painful.

The lesions were thoroughly curetted and treated with lactic acid, and all healed sooner or later.

#### **Etiology and Prognosis of Adenoids.**

CORWIN, A. M., M. D., Chicago. (*Journal of the A. M. A.*, Nov. 10, 1900.) The current impression that adenoids disappear at the age of puberty is due as much to the increased size of the pharyngeal cavity which takes place at that time as to the retrograde metamorphosis of the lymphoid hypertrophy itself.

A changeable climate, with relatively great humidity causes sudden congestions; this favors the growth of the adenoid tissue, whereas, in warm, dry climates this trouble is comparatively infrequent.

The lymphatic temperament, struma and the rheumatic diathesis are predisposing factors. The symptoms which are present when the growth is of sufficient size to cause trouble are detailed, the prognosis from a standpoint of non-interference being regarded as unfavorable, and the question is then asked. "Do all adenoid hypertrophies require removal?" and the same answered in the negative. In those cases in which the enlargement is slight or moderate, and there is no history of past trouble of serious import and no positive symptoms of present trouble with that as the cause, there is no call for operative interference. In the case of a child nearing puberty, with glands of a

considerable size, but showing slight or moderate functional disturbance, one should not wait for the probable spontaneous subsidence of the growth with advancing adolescence. Operation should always be done whenever the hearing is affected. Recurrence practically never happens. As a rule, even in the case of incomplete removal, there is a gradual atrophy and finally disappearance of any remnants, although it may occasionally happen that the remaining portions of the growth will cause a rapid growth of more of the tissue, with a return of the trouble, hence complete removal is the better practice.

In proportion to the large number operated upon the danger from surgical interference is quite remote although deaths have occurred in the operation and from secondary hemorrhage. "Death from the general anesthetic is among the immediate sources of anxiety whether the agent be chloroform or bromid of ethyl the two most recommended." Ordinary measures for surgical cleanliness are to be employed to prevent infection of the wound at the time of operation.

*Richards.*

**Anesthesia in Children with Adenoids, and in the Adenoid Operation, with Special Reference to the Dangers of Chloroform in Children of the Lymphatic Diathesis .**

HALSTEAD, T. H., M. D., Syracuse, N. Y. Children suffering from adenoids are in depressed general health, have weak hearts, impoverished blood, impaired lungs, and resist disease or shock with much less force than do other children.

Contrary to the general belief that chloroform is safe in children, it is especially dangerous during the period of early childhood. According to the researches of Kolisko, who has for many years done about six autopsies per year on persons dying from cardiac syncope due to chloroform, the condition known as the "habitus lymphaticus" is always present; hence, patients of the lymphatic temperament or those in whom there is previous heart disease, or lymphatic enlargements or adenoids should not be operated upon under chloroform.

Wyeth regards chloroform as especially dangerous under twelve years of age, mainly, the author thinks, because

the lymphatic diathesis is most marked before this age.

In the adenoid operation, thoroughness is very important, and the operation should be done with the least amount of pain, shock or hemorrhage. It should always be done under an anesthetic, since without general anesthesia thorough removal of the growths in children under twelve is very difficult if not impossible, and the pain and loss of blood are liable to produce great shock and do irreparable injury to the nervous system of a sensitive child. Cocain is entirely inefficient, owing to its inability to penetrate deeply enough.

Careful searching of the records and personal conversations reveal the fact that there have been many deaths from chloroform in this operation. Nitrous oxid gas is unsatisfactory as a rule, owing to the fact that the patient recovers from it too rapidly to permit the thorough operation, especially if adenoids and tonsils are to be operated upon at one sitting. Ethyl bromid is mentioned only to condemn it, and ether is recommended as the best anesthetic for the adenoid and tonsil operation, notwithstanding certain disadvantages which it has compared with chloroform; these are as nothing in consideration of the greater safety it affords.

The author recommends that the nasal mucous membrane be sprayed with cocain prior to the administration of the ether, and that a hypodermic injection of  $\frac{1}{300}$  to  $\frac{1}{100}$  grain of atropin be given. The excessive secretion of mucous in the pharynx, trachea and bronchi is lessened by the atropin, and the cocain reduces the stimulation of the pneumogastric and inhibitory respiratory centre.

[In the discussion which followed the reading of this paper, a case of death from chloroform anesthesia was cited by the physician in whose practice it occurred, and several other instances given, showing the dangers of chloroform for this operation. The reviewer himself has once been badly frightened in an operation for adenoids where chloroform was used, and has absolutely discontinued it so far as the operation is concerned.]

*Richards.*

**Treatment of Maxillary, Ethmoidal, and Frontal Sinusitis.**

VACHER. (*The Journal of Laryngology, Rhinology, and Otology*, November, 1900.) Empyema of the ethmoid

cells seldom existed alone, but was generally combined with empyema of the frontal sinus or the maxillary antrum. Sometimes the sphenoid sinus was also affected. Patients suffering from these diseases were divisible into two classes, viz., those who would and those who would not submit to external operation. The author discussed the treatment of the latter class only. First a clear view of the parts must be obtained by removing the inferior turbinal and the anterior end of the middle turbinal bodies (the latter by cold or hot snare, or Grunwald's forceps, cutting without either torsion or dragging).

Plenty of time was required, sitting at sufficient intervals to allow the patient to recover from pain, shock, loss of blood, etc. Curettage of the middle meatus, opening each cell of the ethmoid mass, so as to form one cavity easily accessible for swabbing or irrigating. If the frontal sinus were affected it should be probed and irrigated, the entrance to it enlarged as much as possible to permit the application of caustic installations, etc. If the maxillary antrum were affected and the patient refused to have it opened through the canine fossa, its internal wall was to be removed. For this purpose the author used a special pair of scissors. He first plugged the corresponding posterior naris, and held the plug in position by a thin wire—a thread might easily be accidentally cut during the operation. The opening in the external nasal wall ought to be as large as possible to permit of curetting, swabbing with chlorid of zine, and irrigation (twice daily).

Great improvement, if not cure, was obtained by this method in those people who refused external operation.

### III.—MOUTH AND PHARYNX.

#### **Some Observations Upon the Common Diseases of the Throat and of the Naso- and Oro-Pharynx.**

MURARY, GILBERT D. (*The Laryngoscope*, October 1900.)

#### **Conclusions:**

1. That the teeth should receive attention from infancy.
2. That the mouth is the primary cause of many throat troubles.
3. That there is a quality of mildly offensive breath

which arises from micro-organisms present in the mouth, throat, naso-, and oro-pharynx.

4. That bad breath in the mouth particularly before meals suggests infection of the tonsils, naso- and oro-pharynx.

5. Diseased tonsils, not necessarily enlarged and often hidden, no longer acts as a barrier to disease but rather as a germ incubator, and the diseased outer surface should be removed.

6. That the term rheumatic sore throat should be used with less freedom.

7. That the vicious habit of a mother tasting her child's food before giving it should be preached against.

8. For the same reason all instruments, drinking utensils should be carefully cleansed before use.

9. That the coating of the tongue, which is often local in origin, should be removed as systematically as the tartar from the teeth. *Seymour Oppenheimer.*

**Bloodless Encucleation of the Tonsils Under Local Anesthesia.**

FRY, ROYCE D. M.D., Cleveland. (*Cleveland Jour. of Medicine*, March 1900. The author enucleates, "shells out" the tonsil from the surrounding tissue whenever the tonsil is adhesive to the pillars of the fauces or subpalatine space when the tonsils do not project beyond the pillars and in all adult cases where other methods have failed. Enucleation consumes more time, thirty minutes to a tonsil, and sometimes causes severe retching. The instruments used are a long-handled tongue-depressor, curved scissors, curved and straight forceps, enucleator and Bosworth's snare. The scissors are eight inch, sharp-pointed, and gradually curved on the flat for  $1\frac{1}{4}$  inches to an angle of 45 degrees; the forceps are 8 inches spring-blade, mouse-toothed, and curved on the edge for three-fourths of an inch to fifty degrees.

The tonsil is exposed by the patient depressing his tongue, and is caught by the curved forceps, in its upper portion, and slightly pulled inward and forward, thus putting the mucous membrane covering the tonsil and posterior pillar on the stretch, which membrane is then slit from above downward, parallel to and one-eighth of an inch anterior to the edge of the pillar. A second parallel slit is made over the tonsil, posterior to the anterior

pillar; these slits are joined above and below by oval cuts, care being taken not to encroach on the normal arch. The mucous membrane is then stripped off from the tonsil, and when the operation is completed, it folds over the edges of the pillars, and thus facilitates the healing process. The upper end of the tonsil is first loosened, this at times fills the subpalatine space, extending fully one-half inch above the arch connecting the pillars.

Great care should be used not to cut or tear the capsule of the tonsil: this will not occur if the tonsil enucleator is used.

Occasionally a large vessel is found entering high up on the tonsil, which may be caught with artery forceps and then cut.

Torsion controls the hemorrhage. Normally the vessels enter externally and in the lower-half of the tonsil. This shelling-out process should be continued until the tonsil is thoroughly loosened from its surroundings, leaving nothing but the vessels, around which the snare wire is applied.

The application of the snare requires great care in order to include the entire gland. The tonsil is pulled into the loop by a pair of lock forceps, which are not loosened until the tonsil is removed.

One end of the wire is fastened to the instrument before it is introduced into the mouth, the other end is fastened after the loop has been tightened about the gland; otherwise the capacity of the instrument may not be sufficient to draw the loop completely into the canula: a very annoying accident. If any tender or bleeding points make their appearance during the operation, an application of cocain or the dessicated suprarenals will control them."

In over forty cases operated upon, he has had neither primary nor secondary hemorrhage. In no case has the oozing exceeded one-half ounce.

Only one tonsil is removed at a sitting, on account of the cocain effects. The results have been thus far satisfactory.

*Richards.*

**The Importance of the Upper Portion of the Tonsil and of the Supra-Tonsillar Fossa in the Etiology of Phlegmonous Peritonsillitis. Extirpation of the Upper Half of the Tonsil the Only Effectui Preventative.**

BOTEY, RICARDO, M. D., Barcelona. (*The Journal of*

*Laryngology, Rhinology, and Otology*, November, 1900.) Dr. Botey remarked that one often met with patients who had two or three attacks of peritonsillitis yearly, and that one was apt to treat each attack without taking measures to prevent recurrence. Tonsillotomy, morcellement, ignipuncture were frequently resorted to, but though these methods hindered, they did not prevent recurrences.

Peritonsillar abscesses arose from purulent inflammation of the crypts of the tonsil spreading to the supra-tonsillar fossa, which extended to a depth of more than a centimetre, and often had its orifice closed by adhesions. Apart from those cases in which the tonsil was atrophied and adherent to the pillars, to the plica triangularis, to the margo semilunaris, or to the walls of the fossa, in most cases it was easy to separate the gland sufficiently to cut away its upper half, thus leaving the supra-tonsillar fossa free and widely open. Radical enucleation of the upper half of the gland was the only reliable treatment.

The operation was carried out in the following manner: After thorough cocainization of the tonsil and all surrounding parts, the upper half of the tonsil was freed from the pillars, etc., with a small, probe-pointed knife, seized with special vulsellum forceps, and cut off obliquely either with a galvano-caustic snare or with a curved knife. Under certain circumstances—e. g., when there were numerous deep adhesions or when the tonsil itself was of small size—the operation was apt to be difficult, or at least tedious.

In certain cases, indeed, owing to the adhesions, the upper portion of the tonsil could not be extirpated. In these a special procedure was required. Two incisions should be made from below upward, one between the anterior pillar and tonsil, the other between tonsil and posterior pillar, extending up into the soft palate. The tonsil was then to be dragged toward the median line, and the two vertical incisions joined by a horizontal incision a few millimetres above the margo semilunaris: lastly the upper part of the tonsil was dissected away with curved scissors. A cicatrix was left; but as the crypts had disappeared, no recurrence of peritonsillitis was to be feared. Hemorrhage was slight as a rule.

**The Atrophic Pharynx.**

SEISS, RALPH W., M. D., Philadelphia. (*Journal of the A. M. A.*, October 13, 1900.) Years of throat fretting, dryness, itching, tickling and resultant cough form the clinical history. The appearances are characteristic. Treatment is limited to palliation and perhaps arrest of progress, no absolute cure being possible, since fibrous tissue never returns to a normal condition, although treatment which is stimulative and alterative does considerable good. Thymol solution in alcohol and glycerin, tincture of sanguinaria and glycerin, and copper sulphate with massage of the surface by a medicated mop are recommended. The faradic current is regarded as the best method of massage, the positive pole being applied to the pharynx while the negative is held in the hand. Powders, caustics and astringents are condemned. Internal medication does not appear to be of benefit so far as altering the diseased throat is concerned, but may be useful in improving the general conditions. Patients should be frankly told that their condition is not definitely curable.

*Richards.*

**IV.—LARYNX.****Cold Pre-Laryngeal Abscess of Glandular Origin.**

MORESTIN. (*Gazette des Hopitaux*, No. 119, 1900.) Two cases are reported.

I. A boy, 16 years old, presented a rounded fluctuating swelling, about the size of a small orange, immediately anterior to the larynx and adherent to it. In the vicinity there was a tubercular suppurating lymph gland. The larynx appeared normal. Incision into the swellings with free curetting was followed by prompt recovery. Inoculation of the pus from both places into guinea pigs produced typical lesions of tuberculosis.

II. A man, with extensive pulmonary tuberculosis, exhibited a fluctuating, egg-sized swelling over the anterior surface of the larynx. The abscess was opened and death followed shortly after from exhaustion. No positive proof was obtained as to the point of origin of the abscess, but a tubercular lymph gland was considered by the author as the most probable source.

*Goodale.*



**A Contribution to the Treatment of Laryngeal Tuberculosis.**

IMHOFFER. (*Prag. Medic. Wochenschr.*, Nos. 40 and 41, 1900.) The author gives in detail the method of treatment in use in Krause's clinic and states his conclusions as follows:

1. Surgical treatment of laryngeal tuberculosis is the most successful treatment.
2. A poor general condition or advanced local involvement does not constitute contraindications.
3. No danger can ensue to the patient.
4. Laryngeal phthisis is curable even in advanced stages.

*Goodale.*

**Primary Carcinoma of the Larynx.**

FARRELL, T. H. (*The Laryngoscope*, October, 1900.) A case of a man, aet. 54, who had had pain on swallowing for three months, and had lost about forty pounds in weight prior to examination. Laryngoscopic examination showed a grayish fungus growth confined to the left side and involving the margin of the epiglottis, aryepiglottidean fold, arytenoid cartilage and glosso-epiglottic fold. The voice was unimpaired and the glandular structures apparently uninvolved.

Microscopic examination of excised mass showed some to be a typically cellular epithelioma.

Operation consisted of a low tracheotomy and insertion of a Gerster tampon canula through which the chloroform was administered. A longitudinal incision was made from which the hyoid bone to the fourth ring of the trachea in the median line and a transverse incision along the line of the hyoid bone. A thyrotomy was also performed in order that the growth could be completely enucleated.

The cut edges of the thyroid cartilages were subsequently sutured together and the skin flaps brought into place and sutured except at one point where a catheter was inserted in the esophagus. The Gerster's apparatus was withdrawn and an ordinary tracheotomy tube introduced.

The patient made a comparatively uneventful recovery.

Six months after operation recurrence of the growth appeared in the cervical glands on the left side, the larynx however at that time remaining perfectly free.

Difficulty in swallowing solid foods is manifested by the

patient but the motion of the vocal cords is good, giving a very fair voice.

The writer refers to the advisability of a preliminary tracheotomy, the comparative harmlessness of a thyrotomy, associated with other extensive operative procedures, the importance of skilled nursing and the advantage of the cooperation of the general surgeon.

*Seymour Oppenheimer.*

#### **Papillomata of Larynx in Children.**

DICKERMAN, EDWARD T., M. D., Chicago. (*Journal of the A. M. A.*, Oct. 27, 1900.) The disease, while the most frequent neoplasms found in the larynx of children, is fortunately rare, Rosenberg, of Berlin, finding 16 cases in 5808 children under 13 years of age, that is, one in 363 cases examined; and Schröetter had a ratio of 1 in 700.

The author has found 1 in every 1200 cases in his own clinic. He reports five cases:

CASE 1. Child of six years, general condition poor. Nearly entire cavity of the larynx filled with a cauliflower growth of a pale grayish color. Tracheotomy was done for the relief of the dyspnea, and five days later, a thyrotomy. The growth was found attached to the false and true cords and extending up on the inner side to the ary-epiglottic fold, and was removed with scissors and curette, and the base cauterized with chromic acid. At the end of four weeks the tracheotomy tube was removed. The growth recurred five months later, when tracheotomy was again done.

CASE 2. Boy of nine years with voice gradually failing. A lobulated growth was found springing from the under side and free edge of the left cord and at the angle extending across to the right cord. It was removed with a snare, five operations being done in seven months and the last operation was followed with a five per cent. solution of salicylic acid in alcohol, to which was added three per cent. of resorcin, and this was applied daily.

The larynx has been free for two years and the voice good.

CASE 3. Girl of five with warty growth filling in the anterior two-thirds of the glottis. Tracheotomy done for dyspnea, and pieces of the growth removed with snare and sponge. Tube worn for six months. Growth entirely disappeared; no recurrence has taken place.

CASE 4. Boy of two years, with posterior surface of the larynx covered with a papillomatous growth. Tracheotomy performed on account of dyspnea. Growth is growing smaller. No endolaryngeal treatment.

CASE 5. Girl of four years, sent to the hospital on account of dyspnea. Larynx filled with cauliflower-like growth. At the hospital child began to cry, became cyanotic and was dead before tracheotomy could be done. Examination of the larynx showed that the deep inspiratory effort had wedged the growth in the chink of the glottis, asphyxiating the child.

Occurring in the first year of child life, papilloma is generally multiple, pale grey-white in appearance, and springs from the true and false cords, although the whole laryngeal surface may be involved. Later, it may be single or lobulated, and usually makes its appearance in the anterior half of the larynx on the true cords.

A rough, hoarse voice or loss of voice; harsh annoying cough, distressing inspiratory dyspnea, with retracted chest walls and shallow breathing, constitute the clinical picture. The laryngoscopic examination may be very difficult.

For cases in which the dyspnea is not marked, rest in bed, absolute rest of the larynx, and a tonic may be tried. Locally, the author has found that salicylic acid with resorcin, as mentioned above, to be of benefit. Operative treatment may consist of laryngotomy; tracheotomy, with or without intralaryngeal procedures; and intralaryngeal operations. For intralaryngeal operations the author used Krause's small pincet forceps and a snare, following it up every day with the salicylic acid in alcohol with resorcin application.

Spontaneous cure will occur in a certain number of cases, and intralaryngeal methods should always be tried first unless the dyspnea is pronounced, when tracheotomy should be done at once and the tracheotomy tube worn for six months after the growth has disappeared.

*Richards.*

#### **Unusual Papillomatous Growth in the Larynx.**

GIBB, JOSEPH S., M. D., Philadelphia. (*Journal of the A. M. A.*, Oct. 27, 1900.) Man aged 53, previous good health, complaining of slight hoarseness. A pearly-white

deposit was found extending to the base of the left arytenoid body in the lateral wall of the larynx down to, but not involving the true cord of that side, and consisting of an innumerable number of fine filaments closely packed together, presenting an appearance not unlike that of mycosis in the pharynx. There was little encroachment upon the lumen of the laryngeal cavity. But little change took place in the growth for two years, at the end of which time it was found to be increasing in extent and bulk; there was a good deal of dyspnea, coughing, emaciation and inability to sleep. Tracheotomy was done under eucaïn. There was difficulty found in doing the operation on account of the depth of the trachea. The ordinary trachetomy tube could not be worn. The third day there was a purulent discharge from the tube, with high temperature, followed by death on the fourth day.

The growth was found to almost entirely cover the arytenoids, and the lumen of the larynx was encroached upon to such an extent as to barely admit a crow's quill. It obliterated all the normal tissues of the larynx on the left side, and all but the anterior third on right side. The growth was whitish in color, soft and fragile, breaking down upon the slightest touch with the probe. Pathologically, it was found to be a benign epithelioma, with tremendous proliferation of stratified squamous epithelium, with a transformation of the superficial layer into keratin, and a tendency to the formation of epithelial pearls, while many slender connective-tissues papillae projected up among the epithelial layers from the under-lying tissue.

The author regards it as a case of benign growth becoming suddenly malignant, since it remained quiet for nearly two years, and then suddenly took on malignancy.

*Richards.*

**Laryngeal Stenosis Due to Comminution of the Thyroid**  
**Cart 1; .**

MAYER, EMIL, M. D., New York. (*Journal of the A. M. A.*, Oct. 27, 1900.)

The case is that of a soldier in the Spanish-American war, who was injured by a Mauser bullet. The bullet entered directly alongside and over the eye. "It then went through the superior maxilla downward and backward, cut through the posterior portion of the soft plate

and entered the neck. Here it became deflected, probably by the hyoid bone, and entered the thyroid cartilage, thoroughly comminuting it, cutting into the esophageal wall, where, being spent, it dropped into the stomach." It later probably passed from the intestines.

He was injured on July 2nd, 1898, and on August 3rd tracheotomy had to be performed on account of the dyspnea. Various attempts were made to pass tubes for dilatation of the larynx, and some air was got through, and by January, he was able to speak in a hoarse but strong voice. There was a tendency to closure, and various attempts were made at intubation with the different kinds and sizes of O'Dwyer and Schrötter tubes.

The author finally had a special tube made, the head of which was as low as possible, with no retaining swell, and with a threaded opening for a screw piece, and a hollow introducer. This tube was introduced and left in position for a while and then removed.

The vocal cords are now visible, and perform their function; and the author expects ultimately a cure. *Richards.*

#### V.—MISCELLANEOUS.

##### **The Massachusetts State Hospitals for Consumptives at Rutland. Its Purpose and the Work Accomplished During the First Year.**

BOWDITCH, VINCENT Y., M. D. (*Boston Med. and Surg. Journal*, February 8, 1900.)

##### **The State Care of Consumptives.**

NAMMACK, CHARLES E., M. D., New York. (*Philadelphia Med. Journal*, February 17, 1900.)

##### **The Sanitarium Treatment of Incipient Pulmonary Tuberculosis and Its Results.**

TRUDEAU, E. L., M. D. (*Medical News*, Jan. 2, 1900.)

##### **Especial Hospitals for Consumption Among the Poor in Our Cities.**

OTIS, EDWARD O., M. D., Boston. (*Philadelphia Med. Journal*, June 30, 1900.)

##### **Some of the European Sanatoria for Consumptives, and the Final Aims of Phthisiotherapy.**

FREUDENTHAL, W., M. D., New York. (*Medical News*, February 24, 1900.)

**Sanatorium Treatment at Home for Patients Suffering from Tuberculosis.**

KNOPF, S. A., M. D., New York. (*Medical Record*, January 27, 1900.)

**The Registration of Tuberculosis.**

FLICK, LAWRENCE F., M. D., Philadelphia. (*Philadelphia Med. Journal*, June 2, 1900.)

This group of papers by prominent men and in leading journals shows how widespread is the interest in the treatment of tuberculosis. More and more the idea is gaining foothold that the state and the city owe a duty to its tuberculous population, and an endeavor is being made to cure the early cases and make a beginning in the difficult task of stamping out the disease.

Massachusetts is the first of the states to establish a state hospital. This was built in Rutland, Mass., on the southern slope of a hill, at an elevation of about 1200 feet. It is protected on the north by a thick forest of pine. The buildings are arranged as pavilion wards one story high, spreading like the outstretched fingers of the hand toward the south. The patients sleep in open wards as a rule, a few private rooms being provided for severe illness. Sun rooms and piazzas are provided, and caps are made in the neighboring wood. Constant life in the open air is insisted upon, except at the hours of rising and going to bed, (at which times in winter the heat is turned into the wards), the windows are left open during the 24 hours. Sponge or plunge baths at regular intervals; three hearty meals a day, with lunches of eggs and milk or their equivalent; pulmonary gymnastics and fresh air constitute the methods of treatment. Little weight has been given to medicinal measures; nor are serums used, a limited experience having proved disappointing. Only incipient cases are frequently discharged earlier than is desirable, on account of lack of means and the inability of the hospital to care for them a sufficient length of time. The methods taught are pursued at home by the patients, and improvement frequently continues.

One hundred and fifteen patients were discharged, and of this number 35 were classed as "arrested", 37 as "much improved", and 24 as "not improved", and there was one death, the latter from an injury. In the homeopathic di-

vision, of 78 patients discharged, 29 were apparently cured, 25 improved, five became stationary, and 19 were worse. The gain in weight in individual cases was all the way from seven to 44 pounds. With more careful selection of cases, the results promise to be even better. There are accommodations for 180 patients, and \$4.00 per week is charged; the actual cost to the state was \$8.40 per week; it is thought that this cost will be less in the future.

Dr. C. E. Nammack urges the establishment of state hospitals, and says that every state in the Union, almost without exception, has some place within its borders where a pure, dry atmosphere, and some elevation with protection from winds can be obtained. He thinks that 50 per cent of the cases admitted as incipient can be cured and returned to the community as workers. He thinks that the state should also provide for the advanced and incurable cases as well.

Dr. Trudeau has found in his institution at Saranac Lake that 68 per cent of the incipient cases were discharged as well, while only 11 per cent of the advanced, and none of the far advanced cases recovered. He believes that activity of a part affected with tuberculosis always tends to aggravate the disease, and render it progressive.

He has found absolute rest in the open air to reduce the pyrexia, conserve the patient's energies, and abort the activity of the tuberculous process, without disturbing the digestion. On the other hand, Freudenthal does not approve of the rest cure methods, the inactive life, and says, "I wish to emphasize my conviction that instead of the rest cure I am in favor of a working cure." Light out of door work under supervision, he regards as advisable; the absolute rest cure is apt to bring on neurasthenia from inaction of muscles that normally should be at work.

Trudeau has found tuberculin in early suitable cases apparently free from danger, and having some favorable influence in bringing about the formation of fibrous tissue.

Otis thinks it is the duty of every city to provide for the care of the poor consumptive as much as it is to care for the injured and sick poor, suffering from other diseases. When the public is better educated as regards the dangers to others from the consumptive and his sputum, these

hospitals will come. They are needed for prophylaxis and philanthropic reasons. Under good hospital care, many, even the apparently hopeless cases recover sufficiently to resume work. Up to the present time, public opinion has been apathetic upon the matter.

Dr. Knopf gives detailed directions as to the daily life of the tuberculous patient in the home, his general hygiene, diet, and open air treatment. He takes a somewhat middle ground as to the rest cure. A lasting temperature of over 100° F. is an absolute contra-indication to exercise.

Flick argues in favor of the registration of tuberculosis, in order that contact may be controlled, fomites prevented, sterilized, and that innocent parties may be enabled to protect themselves against contamination in dwelling houses. He has found from his own investigations that many cases of tuberculosis are undoubtedly contracted in contaminated houses, and this mode of distributing the disease can only be prevented by registration. Contrary to the long held ideas of heredity he says, "In all probability tuberculosis in the parent tends to produce immunity in the offspring." *Richards.*

**Transmission of Tuberculosis Through the Meat and Milk Supply.**

REPP, JOHN J., M. D., Ames, Iowa. (*Philadelphia Med. Journal.*) The meat and milk of certain tuberculous animals contain living, virulent tubercle bacilli. The tubercle bacilli of cattle are pathogenic for man. The meat and milk of certain tuberculous animals is capable of producing tuberculosis in human beings who use these products as food. The meat of all food animals is unfit for food when highly tuberculous, but is safe for food when the animal is only slightly tuberculous if the meat is well cooked and all tuberculous tissue is eliminated. The milk of a cow with a tuberculous udder is always dangerous for food unless well sterilized. The milk of a tuberculous cow without disease of the udder should always be looked upon with suspicion, and either not used, or used only after sterilization. *Richards.*











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